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January, 1947

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PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

November, 1945-1946

SOURCE AND DISPOSAL OF ENERGY—MONTH OF NOVEMBER

	1946	1945	%
GENERATION* (Net)			
By Fuel Burning Plants	13,680,115,000	11,026,182,000	+24.1
By Water Power Plants	6,273,845,000	6,332,140,000	− 0.9
Total Generation	**19,953,960,000**	**17,358,322,000**	**+15.0**
Add—Net Imports Over International Boundaries	87,171,000	157,628,000	−44.7
Less—Company Use	129,436,000	128,006,000	+ 1.1
Less—Energy Used by Producer	374,344,000	86,133,000	.....
Net Energy for Distribution	**19,537,351,000**	**17,301,811,000**	**+12.9**
Losses and Unaccounted for	2,603,862,000	2,393,442,000	+ 8.8
Sales to Ultimate Customers	**16,933,489,000**	**14,908,369,000**	**+13.6**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of November 30th			
Residential or Domestic	29,650,918	28,036,606	+ 5.8
Rural (Distinct Rural Rates)	1,365,250	1,224,790	+11.5
Commercial or Industrial:			
Small Light and Power	4,677,325	4,373,227	
Large Light and Power	174,604	163,037	+ 7.0
Other Customers	121,010	118,999	+ 1.7
Total Ultimate Customers	**35,989,107**	**33,916,659**	**+ 6.1**
KILOWATTHOUR SALES—During Month of November			
Residential or Domestic	3,413,511,000	3,025,637,000	+12.8
Rural (Distinct Rural Rates)	327,523,000	257,833,000	+27.0
Commercial or Industrial:			
Small Light and Power	2,943,999,000	2,565,569,000	+14.8
Large Light and Power	8,907,819,000	7,656,912,000	+16.3
Street and Highway Lighting	221,952,000	209,205,000	+ 6.1
Other Public Authorities	460,186,000	535,439,000	−14.1
Railways and Railroads:			
Street and Interurban Railways	386,934,000	383,096,000	+ 1.0
Electrified Steam Railroads	222,323,000	224,918,000	− 1.2
Interdepartmental	49,242,000	49,760,000	− 1.0
Total to Ultimate Customers	**16,933,489,000**	**14,908,369,000**	**+13.6**
Revenue from Ultimate Customers	**$300,489,300**	**$276,718,400**	**+ 8.6**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—for 12 months ended November 30th			
Kilowatthours per Customer	1,319	1,218	+ 8.3
Average Annual Bill	$42.74	$41.66	+ 2.6
Revenue per Kilowatthour	3.24¢	3.42¢	− 5.3

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 15 JANUARY, 1947 No. 1

Self - Reliance

By Preston S. Arkwright
1871-1946

In 1935 Preston S. Arkwright addressed the graduating class of the University of Georgia, his Alma Mater, on the need of self-reliance in American life. He was well qualified to develop the theme, since his own life, as a business man and a citizen, exemplified the application of this creed.

His words then have lingered in the mind of the editor of this publication, as they have, no doubt, in the minds of many others who heard or read them. They have lost none of their meaning, and are not likely to do so in the future. Not as a memorial to Mr. Arkwright, but as a re-affirmation of those principles which all true Americans must endorse, selected excerpts of his address are printed below.—W. C.

BUSINESS existed before art, or literature, or education. It co-ordinates and makes serviceable to mankind the thoughts and talents and labor of men. It furnishes the incentive for endeavor and supplies the stimulus for invention and discovery. It gives practical application to ideas. It organizes, systematizes, manages and directs all human effort. It develops the natural resources, opens the mines, refines the raw products, manufactures the materials and conducts the services of exchange, transportation, and distribution. It gathers and disseminates the information. It provides the means for intercourse between peoples the world around. It builds the roads and the railroads, the ships, the vehicles, and the aircraft. It founds the cities. It supplies the food, shelter, clothing, materials, machinery, vehicles, tools, implements, appliances, comforts, conveniences, luxuries, and amusements. It is the work-creator and payroll-supplier. Wherever we live, whatever we need, no matter where grown or produced, business brings it to our door. Civilization has ever followed the trail of commerce and trade *and business leads the way.*

Without the activities of business, there can be no progress, no prosperity, and the activating force of business is the hope of reward. There is no wealth without work, and there is no productive work unless someone creates. Business and the business man serve society by creating work.

It is this creative impulse which concerns us most. It exists only in individuals, never in committees or groups or governments. It does not exist in all individuals, and it can be suppressed and destroyed in those who are born with it. It can never be created by compulsion. Its mainspring is the hope of reward, and it is most quickly destroyed by denial of the reward that is justly due.

The reward sought after may take any one of many different forms, but there must be reward. Without it, without the hope of gaining it, there is no striving, no achieving, no creating. All good and all evil are done by individuals, and whatever individuals may do is actuated by some expectation of individual advantage and advancement, of reward in some form, whether it may be money, power, personal security, popular acclaim, the affection of a loved one, or the satisfaction of a job well done.

This being a fundamental characteristic of human nature, and this ability to achieve residing only in individuals, it follows inevitably that the most progressive and the most prosperous nations are those having the largest number of individual citizens who strive, who seek to achieve, who create work for themselves, and for others, in the hope of gaining the rewards.

In addition to this creative impulse actively at work in a large number of individuals, there must also be one other thing in any successful social system—productive capital. And again we find that the impulse to profit creates it. Enterprise, thrift and self-denial work hand in hand in creating and accumulating whatever capital there is. Someone works, someone saves, someone does without, someone does not spend all he makes in the hope that there will be more later. By the operation of simple mathematical laws, his self-denial aids in storing up the capital which is essential to the progress of society.

The socialistic theory works contrary to these two basic facts in human nature and human affairs. Collectivist in principle, it suppresses the individual and elevates the state. In the name of the state, it takes possession of private capital, and thereby it discourages or prevents the private citizen from creating and accumulating capital. It puts the label of greed upon all striving for individual reward, declares it ignoble, places obstacles in its way, and thereby kills the incentive for striving. It denies the rewards, and immediately it takes away that which calls the creative impulse into being.

Hope of reward is not ignoble. It is the compelling force driving individuals to the performance of service. Service must pay for itself or service ceases. In the operation of business, this compels the effort to extend the benefits of the

service as widely as possible. It forces economy and efficiency, in order that the price may meet the ability of the consumer to buy. Business not only makes the profit but business conserves the profit. It accumulates the wealth. Wealth serves all mankind, no matter in whose hands the accumulated wealth may be. It raises the general standard of living. It makes possible further productive enterprise. It increases the prosperity, the comfort, and the happiness of all people. It sustains government, art, literature, science, and education. The making and saving of profit is, therefore, not only the motive which actuates business effort, but is in reality a part of the service rendered by business.

Not only was America discovered and settled under the principle of free play for individual initiative, but because of it and as a result of it, America has attained its marvelous development and prosperity.

* * *

The worst sin which the socialistic theory commits against any people is the sin which it is now committing against the American people. *It destroys self-reliance.* It teaches the people to rely upon government, not upon self. It gives the government such extensive powers over the daily affairs of the individual citizen that there is no encouragement, no opportunity even, for the exercise of individual enterprise, out of which exercise comes the strengthening and toughening of human fibres to withstand the storms of life, out of which comes *character.*

Idealistically, the theory of socialism says that all should strive for the common good, not for individual gain. That is the ideal, but in practice it works out just the other way. It breaks down character, instead of elevating it, because it destroys reliance upon self. The young American colonists would never have conquered the wilderness, if they and their leaders had been dominated by the schools of thought which now hold sway.

Instead, they rejected and thrust aside all such ideas. They had come to America to escape oppression by government, and they were determined to have none of it in their new world. They were proud of their individual liberties, and they erected barriers to prevent government from ever infringing upon their personal rights. They assigned to government specific and definite jobs, chiefly those of maintaining order, protecting life and property and providing for the national defense. *All the rest they kept within their own hands.*

They were free men, and they drew a sharp line between the rights which they retained to themselves and the powers which they saw fit to delegate to government. They not only asked nothing from government, beyond the performance of the simple duties assigned to it, but they knew that no individual could afford to accept aid or special favors from the government. They knew that any citizen who accepted favors from the government would have to pay for them by submitting himself to government control and thereby surrendering part of his liberty.

They did not believe that the government should support the people, and they believed, even more strongly, that the people should not accept aid from the government. Their liberty of individual action meant too much to them to barter it away in any such transactions. They wanted to be beholden to no man and no government, because they knew that government given an inch, takes an ell. They did not want the government meddling in their affairs any more than could be avoided. Self-reliant, they considered themselves thoroughly competent to manage their own affairs, without interference by government or aid from government. They accepted the responsibility for working out their own destinies, willing to take the risk of loss, in the hope of gaining the rewards which their own industry, intelligence and thrift might win.

In this spirit, they sat down and wrote the Constitution of the United States, as a charter of their liberties and as a safeguard against encroachments by government. They believed that what they had written would endure always to preserve for their children, and their children's children, the same rights of individual action, the same opportunities for personal advancement, which they themselves enjoyed. What they then erected did endure without any substantial change until comparatively recent years. The history of the American nation, its rapid advancement, its outstanding achievements, is proof that they built well.

Never in the history of the world did any other country make such rapid progress as this nation has made. We have no predecessor in past history and we are, or have been, the admiration and envy of the modern world. It has all been due to the fact that this country provided the greatest possible measure of individual freedom and individual opportunity. It gave encouragement to individual enterprise. It developed men with stout hearts, with courage, with daring, with self-reliance; men who didn't give up when they encountered obstacles, but pushed on boldly and bravely to conquer the forests, open the mines, build the railroads, span the rivers, build the electric lines, the radio, the automobile, the telegraph, the telephone, the airplanes.

The United States developed men of that kind because it gave them opportunity and the hope that they might expect to enjoy the fruits of their toil.

The idea that government might ever engage in business was foreign to all the beliefs of the founders of this country, and the possibility that government might ever compete with private citizens in the conduct of private business was repugnant to every ideal and principle they had. Our forefathers were suspicious of government. They devised every safeguard they could think of to keep government from ever extending its power beyond the field they limited for it. They erected barriers in the Constitution to prevent government from ever placing the deadening hand of bureaucracy upon the initiative and enterprise and energy and self reliance of the private citizen. They were determined that government must never be permitted to become a menace to the honest citizen conducting an honest business in an honest way, and they founded a nation upon this plan. It was a good plan. It has worked. It has obtained most wonderful results.

* * *

In the entire world, the American workman and his children have the highest standard of living, and the greatest opportunity for education and advancement. They are the envy of the workers in every other country.

Yes, the American way of doing things is a good way. America's achievements prove it. Business, operating under the American plan of private initiative, individual enterprise and self-reliance, created the wealth which has made these things possible. It created the work and paid the wages which have permitted the entire public to enjoy the highest standard of living of any nation in the world's history. It has sustained the government, built the churches, built the schools and the colleges, paid the preachers and the teachers, supported the professions and the

arts and the sciences and made the United States the most fortunate of all nations.

Of course, there are evils in business. Naturally the desire for profit or reward leads to greed, dishonesty, chicanery, oppression. These are not faults of the system; they are faults of men. They exist among all men in all lines of endeavor. As a class, it can be safely asserted that business men are, if anything, characterized by a greater degree of honesty. In addition to the moral principles of business men, which are certainly as high as the average, honesty in business has for them a distinct commercial value. But because there are dishonest practices in business, there is no need to abolish the entire system. The fact that the hope of reward leads sometimes to excesses provides no valid reason for destroying the incentive to progress that is inherent in the hope of reward.

It is an instinct implanted in man for a purpose, just like all the other instincts. Appetite was given to man to induce him to eat the food that is necessary to sustain life. Appetite is often grossly abused, but is that any reason for destroying appetite? The sex instinct was given for the purpose of reproducing the race. It is frequently abused, but destroy it and you destroy its objective.

So it is, if we destroy the incentive that exists in the hope of reward. Destroy it, and you destroy the objective, which is to induce individuals to develop the resources, build the industries, make the discoveries, invent the tools and appliances, and through the results of their individual efforts to become helpers of mankind.

Operation of business by government does not remove improper practices; it increases them. Whatever the abuses in individually conducted businesses may be, the incompetency, waste, extravagance, and graft so often found in the conduct of industry by government overshadow them.

But this simple fact, known to everyone, that individuals, whether in government jobs or in private life, sometimes make mistakes, abuse their rights and commit sins, is a trivial matter by comparison with the serious issue which confronts us all today.

Whether we like it or not, the past two years have witnessed a profound change in our governmental institutions and in the relationship between the individual citizens and the government.

The safeguards of individual freedom written into the Constitution have been nullified by the device of declaring the existence of an emergency, and then perpetuating that officially decreed emergency so long as it is useful as an excuse for governmental actions not sanctioned by the Constitution. The conception of this nation as a federation of 48 sovereign states, retaining to themselves all powers except those expressly delegated to the federal government, has been broken down by an enormous expansion in the powers of the central government.

The states and municipalities, instead of resisting this change, have aided in it. They have not only accepted, but have sought, grants of money from the federal government, and in pay for this money they have surrendered many of their rights of self government, acquiescing in regulation and control of their activities by federal bureaus.

Federal bureaucracy has grown greater in size and in the multiplicity of its powers than ever before in American history. Already it regulates wages, hours of work, dealings between employer and employe, the crops the farmer may plant and may not plant, and many others—and each day it reaches for more and more powers.

Private initiative and private capitalism are more and more restricted, while State Capitalism grows larger and larger, as the government takes possession of a larger and larger share of the national income and extends wider and wider its activities in the field of business.

The cause of it, in my opinion, is a decay of the spirit of self-reliance in a large number of the people of this country. And that, in turn, was produced, in my opinion, by two things.

The first of these is a widespread misunderstanding of the elementary principles of our American economic system. The second is the teaching and the widespread popular acceptance of economic doctrines which encourage dependence upon the government rather than dependence upon self—doctrines which are basically antagonistic to the American system and which destroy self-reliance, instead of encouraging its development and growth. The first a negative factor, the second a positive factor, have worked together to bring about the overthrow of essential American institutions which have stood for 150 years.

Must we continue stupidly unaware of the simple principles upon which our past successes have been built and upon which our future successes will depend? Must we continue blind to the causes of our present difficulties until it is too late?

Can't we learn the simple axiomatic fact that nothing, for good or for evil, is done except by individuals? Can't we learn that the welfare of the nation, any nation, is best served when it has the best individual citizens and the largest number of best individual citizens? Don't we know from our own personal experience that the best individual citizens are men and women who stand on their own feet, who have a sense of responsibility, who don't wait for some one else to tell them what to do but have some initiative of their own, who keep pressing onward in spite of hardships, who don't quit, who know what to do when emergencies come and do it? Can't we learn that these self-reliant qualities are developed by the American system as it has been in the past? And that they are destroyed by the American system as it is now coming to be?

Remember that our American capitalistic system is not a profit sytem. It is a profit and loss system. It is a hope of profit system.

Not all persons profit, but so long as there is hope, all keep pressing forward, seeking to win the rewards. Not all businesses succeed. More fail than succeed. The average life of businesses is about ten years. It is the exceptional business which lives to see its twenty-fifth or its fiftieth birthday. Risks are the everyday life of business, but so long as there is hope of reward, there is incentive for taking the risks.

This pressing onward, in spite of risks, in spite of hardships and dangers, is what enables business to perform its function as the work-creator and the payroll-supplier. And under our profit and loss system, the general welfare is served, the general wealth is increased, whether the individual business loses or wins.

Whatever wealth business or the individual may create is constantly being distributed back to the public. "Three generations from shirt sleeves to shirt sleeves," says the old proverb. One generation creates new wealth by its energy and accumulates it by its thrift. The next generation scatters it by lavish spending. And the third takes up the job again of building back. The wealth of the community has been increased, both by the generation which made the

wealth and by the generation which scattered it.

So it is with business. Wealth is constantly being accumulated and constantly dissipated under this profit and loss system. Payrolls spread the accumulations of wealth, obsolescence eats up capital goods and requires them to be replaced, new inventions require whole factories to be torn down and new ones built, and failures take all the wealth accumulated by the business that fails and scatter it far and wide.

The individual or the business may lose, but the wealth of the community steadily increases, the standard of living steadily rises, so long as this interplay of profit and loss factors continues at an accelerated pace under the incentive of the hope of profit.

Remove that hope, and the whole process slows down. Fewer people take risks, there is less striving, less new wealth is created, obsolescence and wear and tear continue to eat up capital goods, but there is less replacement of the old by new. Failures continue to occur, but fewer young men, with high hopes in their hearts, launch out in businesses of their own to fill up the gaps caused by the failures.

Remove hope, and you have removed the mainspring. The incentive is gone. The whole process slows down, and eventually the standard of living sinks down to a lower and lower level.

* * *

As individuals and as a nation, we are at the crossroads. Either the government will withdraw from the field of business and return to the policy of encouraging the initiative of the individual, or the government will continue to expand and will take over more and more of the activities that have been traditionally the prerogatives of private citizens and of private business, until the United States has ceased to be a democracy and become some type of collectivist state.

As matters now stand, we are half individualist and half collectivist, and the conflict between these two diametrically opposed theories is producing, and can produce, nothing but confusion—a confusion of cross purposes which causes the country to halt and stumble along, and back and fill, and veer from one side to the other. Neither the individualistic plan nor the collectivist plan can function at its best while this confusion and conflict continue, and it is inevitable that one or the other must eventually win out and take possession of the field.

In making your choice between the two plans, please be sure that you understand the real issues that are involved in this crucial situation.

We can exist under a collectivist plan. The United States, in my opinion, is not going to collapse, cease to exist, disappear from the face of the earth, even if we do become some type of collectivist state. We can exist under it. The question is what kind of existence it would be—whether it would be living or just existing.

What may we expect if collectivism becomes dominant? You can find the key to that riddle in the great prominence that is given these days to the idea of *security*—security for the individual against the hazards and risks of life, security against old age, security against unemployment, security against sickness and accident, security against risks of competition for the business man under the NRA, security against crop surpluses for the farmer under the AAA, security against this, that and the other thing—*and all of this security to be achieved, not by the enterprise and energy and thrift of the individual, but by the passing of laws, by codes, by regulation, by government.*

I am not decrying security. All of us desire it, especially as we grow older. No self-respecting person wants to see his parents in the poor house. Certainly none of us want to end up there ourselves. Every foresighted person wants to have something laid by for a rainy day. *Security versus lack of security is not the issue.*

The issue is whether the responsibility for the individual citizen's security shall be assumed by the government or by the individual citizen himself.

If the government is to take over that responsibility, then we must, as citizens, accept the penalties and sacrifices which such a system requires. If that is to be the government's job, instead of my job and your job, then each of us necessarily becomes a dependent of the government. Each of us becomes, in greater or less degree, a ward of the government, and we must accept the position of inferiority that is the lot of wards.

We cannot be dependent and independent at the same time. If the government is to have that responsibility, then the government must also have the authority to manage the personal affairs of the citizens. Without that authority definitely placed in the hands of the government and firmly exercised by the government, no collectivist system can function.

Security obtained through government is always at a sacrifice of personal liberty.

* * *

But, if security is all we want, perhaps the collectivist plan might provide it, after a fashion. If we are willing to accept a lower standard of living, in order to gain security of a sort, perhaps the collectivist plan is what we want.

Is security all we want? Have we become a nation of old people, interested only in safety for our declining years? Has life lost its interest for us? Are there no more risks to be taken, no more rewards to be won? Are we too fearful of the risks to strive for the rewards? Is existing all we want, not living?

We were not born just to live until we die! We were born to be of some use in this world, to achieve something, to accomplish something, to do some good for ourselves and for our fellow man. We were not born just to be safe, and nothing else, to be guided by a careful hand from the cradle to the grave, never to know the thrill of taking a chance, never to know the joy of winning the prize.

Opportunity is what we want, not security! What a dull world it would be if security, bought and paid for by surrendering opportunity, was all that we had!

If the world is finished, if there are no more rewards to be won, if there is no more wealth to be created, if there is nothing to be done but divide up the wealth that already exists, if there is no further need or use for the creative impulse, if we have become a nation of old people in our short 150 years, if the fire has gone out of us—then the collectivist plan is what we want.

But, if there is any youth left in us, if there are any more inventions to be made, if there is any more progress to be achieved, if there are any more rewards to be gained—***give back to us,*** *as free born Americans, our opportunities and we will build here a finer world than the world has ever seen!*

How Cleveland Company's Rapid Switch to Oil Was Made During Coal Strike

By David R. Buschman

Reprinted from *The CEICO Motor*, January, 1947

ON the morning of Nov. 26, 1946, while Cleveland and Northeast Ohio were still asleep, a routine order went from the system dispatcher's office to one of the Cleveland Electric Illuminating Company's power plants.

Quickly, an additional turbogenerator began feeding electrical energy into the Illuminating system. The pattern of a routine day was under way, but the day was to be far from normal.

Output was stepped up rapidly to anticipate the soaring demand for electric service. Before noon, output for the Company's system climbed to 745,000 kw. An all-time peacetime peak had been set for the second successive day.

The big turbogenerators were humming a mighty song of power . . . power for the many hundreds of factories whose pay rolls mean jobs and production in Cleveland . . . power for escalators and elevators and trolleys packed with cheerful Christmas shoppers . . . power vital to progress and the public welfare.

And throughout the Company's system, scores of men were working skillfully, tirelessly, in a day-and-night race to forestall the threatened choking off of this area's source of electric power.

The emergency caused by the stoppage of soft coal mining was five days old.

CONCERNING OUR COMPANY'S RESOURCES AND OUR TEAM'S RESOURCEFULNESS

By Elmer L. Lindseth

President, Cleveland Electric Illuminating Company

A COMPREHENSIVE account of the Company's emergency conversion to temporary oil-burning facilities is published on the following pages.

The fact that this job required tremendous resources —and resourcefulness—becomes more evident with full appraisal of all that had to be done.

For example, the conversion was carried out with sufficient speed in part because the Company had plenty of trucks to go for equipment in neighboring states, and bring it back.

Arranging for delivery of up to 1,000,000 gal of oil a day, at a time when many other companies also were interested in getting large quantities of fuel oil, was different from driving into a filling station and asking the attendant to "fill 'er up."

Obtaining vital blue-prints, dozens of burners, thousands of feet of tubing and large amounts of other equipment and material also was a vast job.

In these operations the Company's background of industrial friendship and sound credit, earned over many years of close relationship with other concerns, paid large dividends.

The Company's resources of equipment and credit, however, could not have done the job alone. The fast conversion would have been impossible without the Company's resources in skilled manpower, and the employees' resourcefulness as individuals and as a team.

Knowing where to find scarce materials and equipment, correlating the work involved in a project covering four large plants, producing "home-made" equipment in our machine shops, converting a variety of materials and machines into practical oil-burning systems, overcoming mechanical and operating difficulties, and learning fast how to burn a fuel with which the Company has had comparatively little experience, were only a few examples of the resourcefulness exhibited by the Illuminating team.

It long has been evident that any emergency which threatens the maintenance of adequate, dependable electric light and power service is also a threat to public welfare and safety.

Next only to air, water, food, shelter and clothing, the prime necessity of modern life is electricity. Any protracted paralysis of electric service would completely disrupt normal living.

This was recognized in the program undertaken by the Federal government to conserve coal supplies and to enable electric utilities to continue to operate.

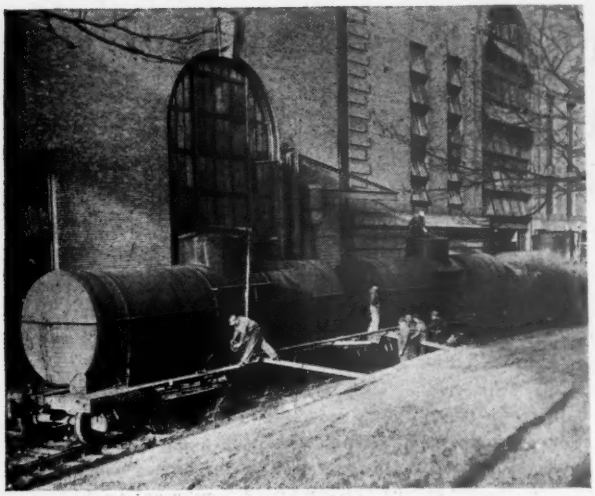
While the government introduced coal rationing right after the mining stoppage, and a few days later imposed severe restrictions on railroads which would have shut down many industries, it went only so far as ordering a "brownout" by electric consumers.

However, if the coal mining stoppage had been further prolonged, the government was prepared to order further restrictions on use of electricity, so that companies like ours could continue to supply all vital requirements.

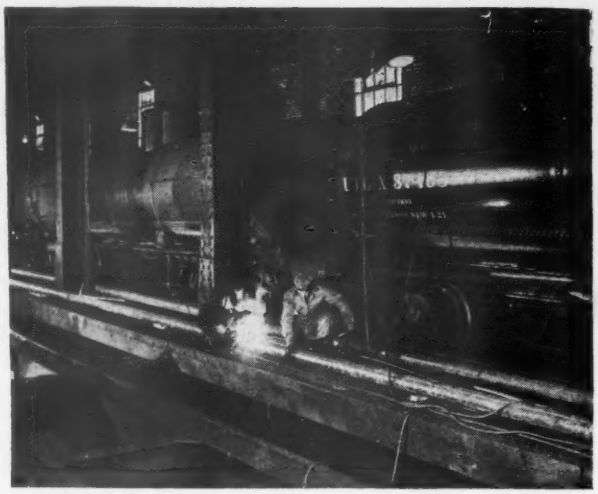
In fact, before coal mining was resumed, the government had issued orders for much more drastic curtailments of consumption of electricity, which would have had to be put into effect in the area we serve, if our fuel reserves had been decreased by just a few days' supply.

But in the coal mining stoppage, as in countless other emergencies—due to storms, floods and other "acts of Providence"—the Company and its employees again proved their ability to surmount great problems in maintaining adequate, dependable electric service in the area we serve. If the coal mining stoppage had continued indefinitely, our customers still would have had sufficient electricity.

The Company fully recognizes and deeply appreciates the efforts of all those who contributed so much to this vital conversion project.



Employees install pipeline direct to tank cars that are used as storage tanks in emergency oil-burning operations at the Lake Shore power plant.



Welders rush installation of pipes to carry oil to burners in East 20th Street central steam plant. Railroad oil tank cars in background were used as temporary storage tanks.

Coal reserves of the Company's three power plants and its two central steam heating plants were being consumed in giant gulps. But in engineering offices and in the big plants grim men were using an old word that had a magic new meaning to spur them on.

The word was *oil*.

Prodigious Task Begins

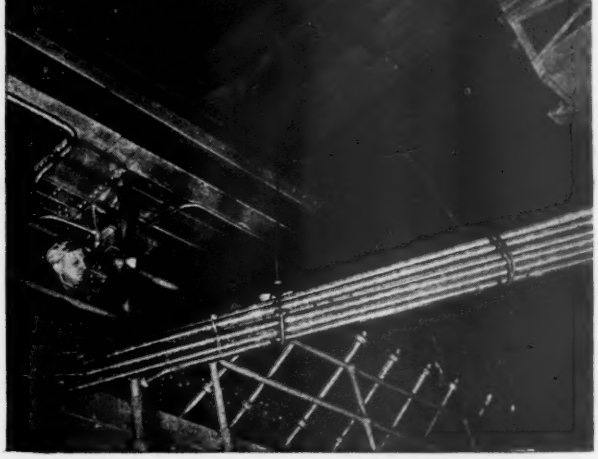
On Nov. 21, first day of the coal mining stoppage, the Company began the prodigious task of converting from coal-burning to temporary oil-burning equipment in its three power plants and in the 20th Street central steam heating plant.

Section of wall at Ashtabula power plant removed to allow installation of pipe.

Coal reserves had been dwindling steadily due to a lack of railroad cars for bringing coal to the plants, and due to other factors. A prolonged coal mining stoppage could have meant disaster.

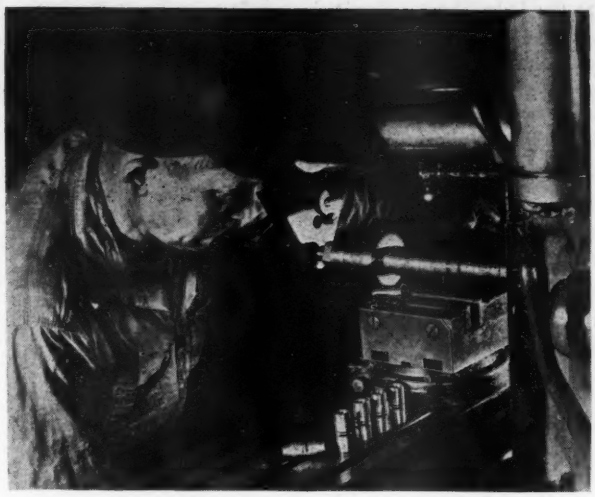
Something had to be done, and only the most dynamic and resourceful action would suffice. The job had to be done in spite of monumental problems already raised by shortages of manpower and materials, and by the fact that equipment had to function efficiently in the face of record peacetime demands for electric service.

Several members of the Steam department immediately went to Detroit, where they obtained enough temporary

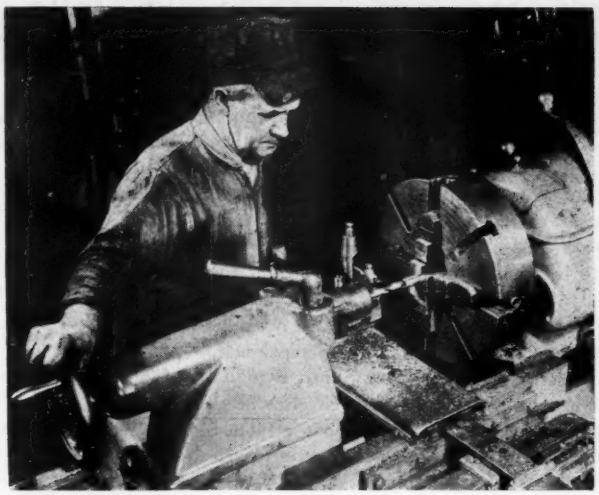


Pipe for oil-burning installation is hoisted to burner floor at Lake Shore power plant.

Electric motor-driven oil pump is hooked up at Lake Shore to draw oil from reservoir and force it through burners.



Machinists at Lake Shore power plant produced oil-burners after the Company was unable to purchase or borrow the equipment in sufficient quantities.



Oil-burners with 3/32-inch opening were turned out at Lake Shore and proved more satisfactory than ⅛-inch type specified in blueprints.

equipment to burn 120,000 gallons of oil a day.

This was only a start. The Company had decided to install sufficient oil-burning facilities to burn 1,000,000 gallons of oil a day, the equivalent of 6000 tons of coal, or three-quarters of the daily fuel requirements at the time.

This was quite a decision to make. It meant that the cost of generating steam and electricity would be doubled. It meant spending up to $40,000 a day extra for fuel; and no one knew when the coal mining stoppage might end.

Engineering, construction, maintenance and operating departments began a non-stop crusade to find, prepare, and install the temporary oil-burning materials and equipment.

Burners Are "Home-made"

A number of burners were bought or borrowed, but there weren't enough of them; so the Company obtained blueprints to be used in making its own burners.

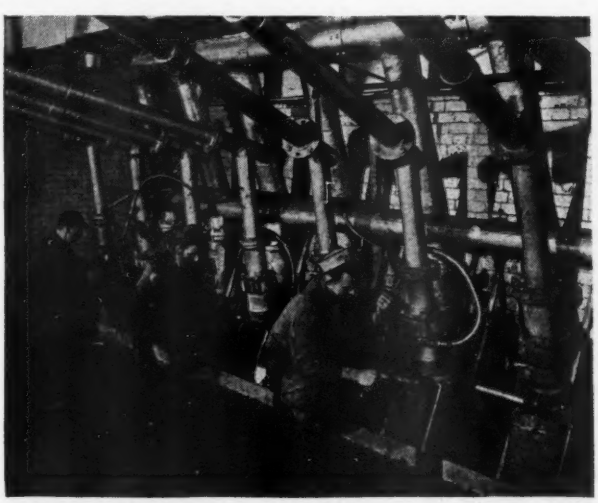
The blueprints were turned over to plant mechanics. At the Lake Shore power plant, there was only a 3/32-in. saw for making a cut that the blueprints said had to be ⅛ in. The cut was made with the Lake Shore saw, and the burners worked fine. At Avon, a ⅛-in. cut was made, as specified in the blueprints, and it was found that in the Company's case, this size wasn't as efficient as the size that had been used through necessity at Lake Shore.

Company trucks were dispatched to Chicago, Pittsburgh, Detroit, and Youngstown for equipment.

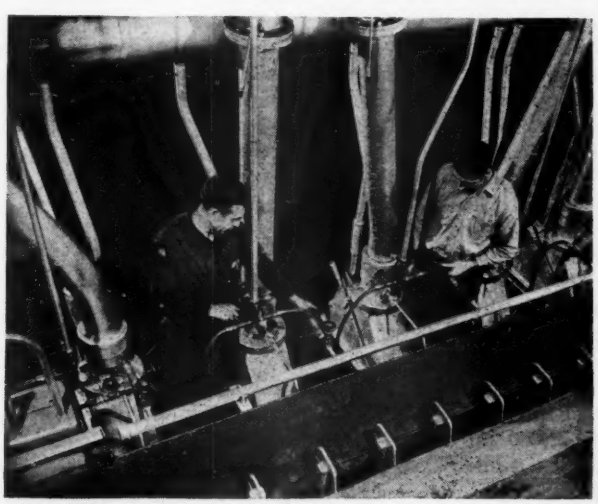
One Pittsburgh trucker arrived here on Thanksgiving eve with a load of material for the Company. Instead of taking the material to the 20th Street steam heating plant, he parked the trailer in a trucking company garage here.

Without this material, the crews which were installing the emergency oil-burning equipment would have been stopped. So early Thanksgiving morning, the work of tracing the truckload of material began. It was finally located, but the manager of the garage at first couldn't guarantee to move it on Thanksgiving day.

However, the men on the job weren't taking "no" for an answer. By Thanks-



Mechanics install oil-burners in burner boxes of Lake Shore plant boiler. Small pipes feed oil and large pipes are regular equipment used to supply pulverized coal to boiler furnaces.



Operation of emergency oil-burning equipment at East 20th Street central steam plant is checked. Eight different types of burners were installed at this plant.

giving night most of the material on the truck was in place at the 20th Street plant.

Finding oil tank cars was another big job. As the average oil tank car holds 10,000 gal, 100 cars are required to deliver a 24-hr supply of 1,000,000 gal. But to maintain a daily delivery of 100 tank cars, a total of 500 cars are necessary. Also, an additional 14 cars had to be found for use as reservoirs at the plants.

Pumps were a problem. One was obtained from the Ashtabula screenhouse, and two from the Lake Shore B plant. Three others were borrowed elsewhere, and the Electrical department provided one. Ninety-eight orders were placed for mechanical equipment, including 144 different items.

By the end of the first week of the coal mining stoppage, the headlines were dismal. The Civilian Production Administration had restricted use of electricity in 21 states, beginning Nov. 25. These restrictions were minor and caused no great inconvenience.

Working Against Time

But delay in converting to oil for fuel would have depleted the Company's coal reserves to the point where drastic restrictions on use of electricity by its customers would have been put into effect by the Government. Again and again, the men on the job voluntarily increased their pace, to forestall this danger.

They knew that delay might mean that thousands of workers would be laid off in dozens of plants and offices, by government curtailment of use of power. The men on the job were not merely working; they were fighting to keep the factories and stores, the street cars and trolley buses running at normal during the busy Christmas shopping season.

And by Nov. 30, oil was being burned at a rate of 114,000 gal a day in the Lake Shore B plant.

The work of installing the oil-burning equipment continued to gain momentum, and the Company began burning oil at the East 20th Street steam-heating plant on Monday, Dec. 2. It was just ready to begin burning oil at the Avon power plant when the coal mining stoppage ended on Dec. 7.

During the final eight days of the coal mining stoppage, the Company burned 1,561,000 gal of oil, the equivalent of 9000 tons of coal. Approximately one-fourth of all steam and electric generating requirements were being supplied by oil-burning equipment.

Initial installations at the Lake Shore B plant and the 20th Street plant had been expanded. The Lake Shore A plant would have been completely converted to oil-burning equipment by Monday, Dec. 9. The Ashtabula power plant would have been converted to oil by Wednesday, Dec. 11.

Goal Would Have Been Met

If the coal mining stoppage had continued, the goal of 1,000,000 gal of oil a day would have been reached by Dec. 15, only 24 days after the emergency began. With the drop in load expected to follow the railroad embargo, oil-burning capacity would have been sufficient to have satisfied all legitimate demands on the system for steam and electric service.

More than a dozen different departments and divisions of the Company cooperated with the Steam department in making possible the conversion from coal to oil.

These included Transportation, Purchasing, Stores, Electrical, Electrical Engineering, Building Construction, Traffic, Civil Engineering, Eastern Division lines, Brooklyn shops, Rates and Statistics, General Accounting, Budget Accounting, and many others which aided both directly and indirectly.

The oil-burning equipment installed in the Company's plants is temporary. Eight different types of burners were installed at the East 20th Street plant. Part of this temporary equipment will be left in place for the time being, and the valuable experience gained in the technique of burning oil will be available if use of this fuel ever again becomes necessary.

The communities served by the Company were quick to give the Company full recognition for the conversion.

Cleveland and Northeast Ohio newspapers first told the reassuring news to an anxious public, and news services relayed the conversion story to the farthest corners of the nation.

Nation-wide Acclaim

The conversion was described in newspapers from coast to coast . . . in *The New York Times* and *The Los Angeles Examiner,* and in dozens of other papers in between.

Editorials of approval followed the initial installation.

"The instance of The Cleveland Electric Illuminating Company moving to install oil-burning units in its generating plants is a fine example of public service by a private utility," *The Cleveland News* said on its Dec. 2 editorial page. "In Cleveland, it is heartening that the wide-awake C. E. I. is moving quickly to protect its customers and its community."

On its editorial page of Dec. 1, *The Cleveland Plain Dealer* said:

"Yesterday's *Plain Dealer* carried a story . . . disclosing the resourcefulness and foresight of the Cleveland Electric Illuminating Co. management in installing facilities for the burning of oil, as a substitute for coal, to develop a substantial part of the power flowing through the company's distribution system to the homes and factories of northeastern Ohio.

"What the Illuminating Co. is doing in the interests of public safety and convenience is being done at tremendous expense and the cost of burning oil to develop steam to drive its turbogenerators is currently so high that, obviously, the substitute fuel cannot be used permanently as yet. But the technological information that will be derived from the C. E. I.'s emergency measure will unquestionably be of great value in effectuating economies in the use of a competitor of coal to generate electric power."

Purchasing and Stores Committee Meeting to Be Held at Chicago

A NEW committee, the Purchasing and Stores Committee, was authorized by the Institute's Board of Directors at its meeting on Dec. 12, 1946. Its membership initially will be that of the Materials and Supplies Committee, previously one of the standing committees in the Accounting Division. Recently the members of this committee have concerned themselves more with the problems of procurement and stores operation than with materials and supplies accounting. The majority of its members have been purchasing agents and supervising storekeepers. The new Purchasing and Stores Committee will be headed by R. S. King, Union Electric Company of St. Louis, who had been the chairman of the Materials and Supplies Committee. A new committee on Stores Accounting is expected to be organized in the Accounting Division with which the Purchasing and Stores Committee will cooperate on questions of accounting for materials and supplies.

(*Continued on page* 26)

Electric Companies Announce Edison Centennial Plans

Survey of Representative Group of Companies Reveals Extensive Advertising and Publicity Programs

By Clarence L. Law
Chairman, Edison Centennial Committee

THE Centennial Anniversary of the birth of Thomas A. Edison, which will occur next February 11, will be commemorated by electric power companies with local celebrations of wide scope and importance, to judge from reports reaching the EEI Edison Centennial Committee.

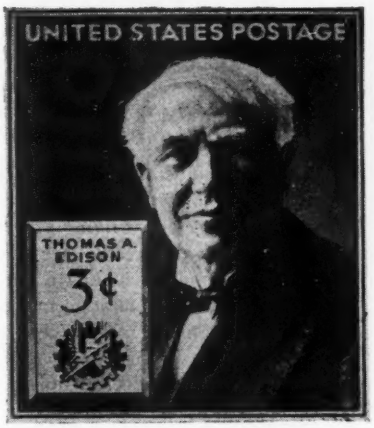
Edison Day dinners and luncheons, newspaper, radio, window display, outdoor and other forms of advertising, special programs in cooperation with service clubs and civic organizations, employee meetings, and many other events will all be employed by the industry to mark the Centennial of the man who can rightly be called its founder. Other industries that have benefited from the genius of Edison will also pay appropriate tribute to his memory, in cooperation with electric utility companies.

This article will bring member company executives up-to-date information on plans made by typical companies for observance of the Centennial, and also present the results of a survey of the plans made by a representative cross-section of the industry. The Centennial programs described in the following pages are in addition to those described in my article in the December, 1946, issue of the EEI BULLETIN.

Pacific Gas & Electric Company

The Pacific Gas & Electric Company plans to celebrate the Centennial throughout its territory during the entire week of February 11, working in close cooperation with the Northern California Electrical Bureau. The week will begin with a proclamation by the Governor of California, outlining the aims of the celebration, which will be intensively publicized.

Newspaper advertising will be placed by the company in 360 local daily and weekly newspapers. The February issue of the company magazine, which is sent to all customers and stockholders, will carry an illustrated article on the Centennial. Magazine advertising will also be placed in local periodicals.



The postage stamp above (enlarged) has been prepared by the Post Office Department to commemorate the Edison Centennial. It will be on sale throughout the country soon after February 11th. Power companies using stamps are urged to make this stamp standard practice during 1947.

Local radio stations will devote suitable announcements and programs to the Centennial during the week. The Electrical Bureau has contacted various school departments, urging that special programs for the student bodies be organized, and that the schools use the set of eight educational posters on Edison that have been made available by the National Centennial Committee. Service clubs and civic organizations in the area also plan to pay suitable tribute to Edison at their regular meetings during the week of the 11th.

Portraits of Edison will be the high-spot of window displays to be used in each company division headquarters office. Window display materials for use by cooperating dealers will also be made available for their use.

An All-Industry Edison Luncheon will be held in San Francisco on February 10, with civic leaders, educators, former friends of Mr. Edison, and members of the San Francisco Electric Club, the Northern California Electrical Bureau and other organizations of the industry attending. Special meetings of Pacific Gas & Electric Company employees will also be held in commemoration of Edison.

Cleveland Electric Illuminating Company

Another outstanding week's activities is scheduled by the Cleveland Electric Illuminating Company, Cleveland, Ohio, which will begin with the broadcast of the "Hour of Charm" radio program from the Cleveland Public Auditorium on Sunday, February 9. Music that the great inventor particularly loved will be played on this program by Phil Spitalny and his popular all-girl orchestra. An Edison Supper will be sponsored by the Illuminating Company and will follow the broadcast.

Advertising in connection with the Centennial will be placed by the company in about 70 newspapers. An Edison edition of the company magazine will be published by the company during February. The company is also arranging for the display of the set of educational posters in local schools.

At the General Electric Lighting Institute in Nela Park, the Centennial will be commemorated with an Open House for science students, which will be held through the entire week of February 11. A special meeting for science teachers and educators will be held on February 11. Several members of the Nela Park staff, among them Dr. Matthew Luckiesh and Ward Harrison, will speak on the achievements of Edison before luncheon clubs and other groups.

The Electrical League of Cleveland plans to hold an Edison Dinner on February 8. This will be followed by another Edison Dinner on the 11th, which will be jointly sponsored by the Cleveland sections of the American Institute of Electrical Engineers, the Illuminating Engineering Society, the Institute of Radio Engineers, and the Cleveland Engineering Society.

Long Island Lighting Company Features Edison Generator

In addition to extensive newspaper and window display advertising in connection with the Centennial, the Long Island Lighting Company plans to sponsor a special exhibit, the feature of which will be an old Edison bi-polar "Mary Ann" type of generator. The generator has been put into operating condition, and will be used to light replicas of the first Edison carbon lamps. This exhibit, it is planned, will be shown extensively throughout the company area.

New Jersey Power & Light Company

The New Jersey Power & Light Company will feature the Centennial in its newspaper and window display advertising during the month of February. Arrangements are being made for the display of the educational posters in schools in the company area.

In addition, all company trucks will carry special Centennial posters during February and March. Post-card bill messages will be employed during January and February. Poster meter messages will be used on all outgoing mail, beginning in January and continuing for an indefinite period. News articles on the Centennial events will be carried in the company publications.

The Reddy Kilowatt Service film, "Reddy Made Magic," will also be extensively employed in the area by the company since this film contains an episode showing the invention of the electric light by Edison.

Survey of Plans of Representative Group

A survey of the plans being made by a representative group of electric power companies for fitting celebration of the Centennial discloses that the entire group, or 100 percent, plan to feature this event in their newspaper advertising during the month of February. A total of 50 percent of the reporting companies will feature the Centennial in their radio advertising during the same period, and 90 percent will employ window displays with portraits of Edison, replicas of his original inventions, etc.

Outdoor advertising tieing-in with the Centennial will be used by 25 percent of the group, the survey shows. About 33 1/3 percent of the companies plan to hold Edison Dinners or Luncheons, either as the sole sponsor or in cooperation with other industry groups and allied industries.

The set of eight educational posters on Edison's life and achievements will be displayed in schools throughout the areas of 60 percent of the reporting companies. About 75 percent will feature the Centennial in their house organs, customer publications, bill enclosures, etc.

Roughly 30 percent of the group will cooperate with service clubs and other local organizations, in arranging tributes to Edison at the meetings of these clubs occurring on or near February 11. The use of special sections in local newspapers on the Centennial is definitely planned by 10 percent, with another 10 percent tentatively scheduling such sections.

Over 10 percent of the reporting companies plan to hold employee meetings during the week of the 11th, at which appropriate tribute will be paid to Edison.

Centennial Celebration Scheduled in Cincinnati

The Cincinnati Electrical Association plans to sponsor a Centennial dinner on February 13, to which the entire electrical industry of Cincinnati will be invited. Decorations will employ the Centennial theme. Replicas of Edison's first lamp, and of the modern incandescent lamp, will be made of ice, to emphasize the contribution of Edison to modern living.

The Cincinnati Gas & Electric Company's interior display during February will consist of a replica of Edison's early workshop. As part of the display, the company is preparing a window display built around the theme of the popular song, "The Old Lamplighter." The song itself will be transmitted by a public address system to those outside.

Other windows of the company's offices will feature portraits of Edison, with some of his many inventions. Local merchants have been asked to devote large window space and promotional effort to the Centennial activity.

Additional Radio Programs Featuring Centennial

The following radio programs, in addition to those mentioned in my previous EEI BULLETIN articles, will feature the Centennial:

Spotlight on America, Mutual Broadcasting System, Friday, February 7, 10 P. M., coast to coast.

School of the Air, Columbia Broadcasting System, March 12, 5 P. M.

Adventures in Science, Columbia Broadcasting System, Saturday, February 8, 4:30 P. M.

Record of Edison's Last Public Message Available

A recording of the last public utterance of Thomas A. Edison, which was made in his 84th year, and directed to the members of the electric power industry in convention at Atlantic City on June 11, 1931, has been located after a long search.

This transcript of Mr. Edison's words, originally broadcast over the National Broadcasting Company's network, was made from a private recording, which is believed to be the only one in existence.

The historic statement of Mr. Edison mirrors his courage and faith in America, and carries a potent message to us today. The statement follows:

> *"My message to you is: Be courageous! I have lived a long time. I have seen history repeat itself again and again. I have seen many depressions in business. Always America has come out stronger and more prosperous. Be as brave as your fathers before you. Have faith! Go forward!"*

The reproduction of Mr. Edison's voice is amazingly lifelike, according to those familiar with the great inventor in his later years. His tone reflects his great energy and driving power, and make the message most impressive.

Copies of this record are available from EEI at cost, both for radio transcription and for standard phonographs. No introduction is used; only the message within quotation marks above is heard on the record. The price is $2.50 per record.

This message of Edison offers outstanding opportunities to power companies celebrating the Centennial. It should be effective when used on company radio programs, as a feature of Edison day dinners, and at employee group meetings, when suitably introduced by a speaker.

Effect of Automatically Controlled Motor-driven Devices Upon Distribution Feeder Loads

Following Power Supply Interruptions

By E. W. Oesterreich
General Superintendent of Distribution, Duquesne Light Company, Pittsburgh, Pa.

Presented before the Transmission and Distribution Committee, Edison Electric Institute at Virginia Beach, Va., October 8, 1946

IT has been found that some distribution circuits which became de-energized for extended periods of time could not be re-energized by the normal procedure of reclosing the feeder circuit breaker. Protective devices, adjusted for normal circuit load conditions and equipment capacity ratings, will in many cases, operate with all indications usually experienced in "closing in" on a primary fault. Sectionalizing the circuit and picking up segregated portions of the load then becomes necessary in order to permit the re-establishment of service to the entire circuit.

In the first cases of this sort which occurred, the conclusion was that the relay operation was due to a transient fault condition which left no evidence discernible under ordinary inspection procedure. However, one of the later cases occurred at a time when it was possible to observe the operation of the protective devices during the total circuit reclosing trials, and the relay behavior and indicated loads while "picking up" sectionalized portions of the circuit. All indications were that excessive overload existed generally throughout the circuit. In all of the cases of this particular type of trouble, the load supplied was suburban, fringing on rural, with a large number of service connections supplying motor-driven appliances automatically controlled by pressure, temperature or water-float relays or contactors in addition to the usual lighting and household appliances. Apparently, the unusual operating condition was due to the characteristics of the load.

Calculations based on rough approximations of diversity between appliance demands, proportion of total circuit load represented by appliance motors and typical motor starting characteristics indicated the possibility of a load condition which could cause breaker operations such as those experienced. If the motor load was a large percentage of total circuit load and the diversity of demand and the operating cycles of the motors were such that an interruption to the circuit would automatically set a large proportion of motor controls on the "start" position, then abnormally high motor starting and running currents would, upon re-establishment of service, be super-imposed on the normal lighting load until sufficient time had elapsed to permit the effects of diversification to again become operative. If these preliminary conclusions were correct, then our past practices of establishing capacity ratings of distribution circuits would have to be reconsidered and possibly modified. It was unconceivable to accept as tolerable any operating condition under which the normal residential consumer would have to be disconnected from the source of supply for an extended period of time before a primary power supply source in normal operating condition could be re-established after a service interruption.

A series of tests were conducted to determine the effect of eliminating or reducing the diversification of motor starting and running current demands on the circuit load.

A distribution circuit with which we had previously experienced reclosing difficulty was de-energized for 30 minutes, a period of time considered sufficiently long to allow most of the automatic control devices on the appliance motors to be closed in the operating position. High speed graphic meters were installed to record feeder input voltage, amperage and power factor. Three sets of readings were taken, one each for maximum boost, maximum buck and neutral starting position of the voltage regulators set for automatic operation.

The test results obtained confirmed our previous opinions. Fig. 1 shows the

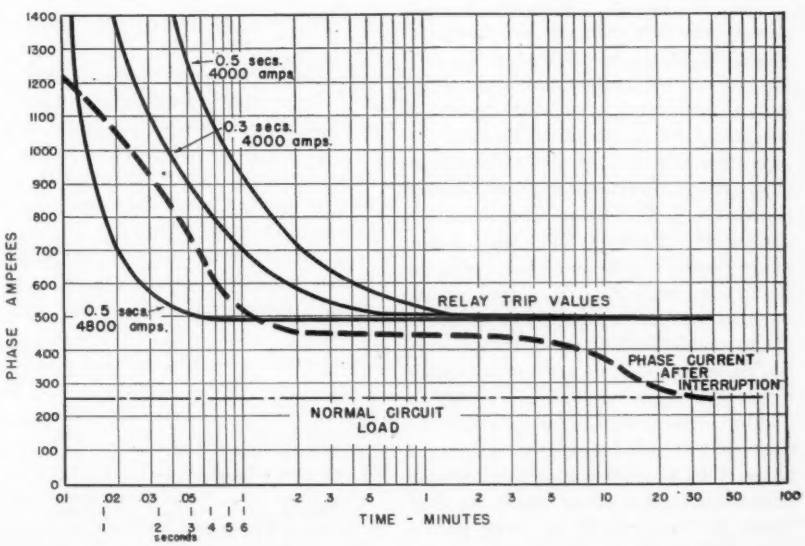


FIG. 1 Time current values for circuit protective device and load following reenergizing circuit

total peak load phase current for varying periods of time together with the time-current values for the feeder breaker relay in service at the time of the tests and of a more modern type relay.

The short-time values of the motor starting currents superimposed on the lighting load are well outside of the operating zone of the relay which was in service and closely approach the short time trip characteristics of the relays having greater inverse time characteristics. The maximum value of undiversified motor running current when added to the lighting load closely approaches the long-time tripping current values or "pick-up" of all of the relays. The slope of the circuit load curve for the first 10 seconds after energizing the circuit strongly suggests the probability of the initial existence of extreme low voltage conditions on a large portion of the circuit, the voltage gradually improving as successive motors receive adequate starting voltage and come up to running speed. This is brought out more strongly by comparing the load values for the maximum regulator buck and boost conditions which show a current peak approximately 27.0 per cent lower for the maximum buck starting position with a correspondingly lower current reduction rate of approximately 35 per cent.

As a result of these field experiences and tests an analytical study was made to determine the probable effect of motor starting and running currents for various values of motor diversification and percentage of total circuit load represented by motor load.

The assumption was made in these studies that the average household refrigerator motor size was 1/6 hp, having a starting current demand of 15 amp at 110 volts, a running current of 3.3 amp, and an operating cycle of approximately 5 min in every 20-min period. Water pump motors were assumed to average ½ hp in size, with a starting current of 35 amp at 110 volts, a running current of 7.0 amp, and operating 3 min in every 60-min period. Since these two types of appliances represent the preponderance of automatically controlled motor load, no attempt was made to include other appliances.

The hypothetical circuit supplying these motors was considered as being 3 phase, 4 wire, 4000 volt with 3000 residential consumers all of which use electricity for lighting, 80 per cent for refrigerators and 10 per cent for water pumps. The customers were assumed to be uniformly distributed along the circuit, normally receiving service voltages varying between 110 and 120 volts according to a probability curve centered at 115 volts. The loads were assumed to be as follows:

	No. of Services	*Average Volt-Amperes*	*Diversity*	*Instantaneous kva*	*% Total Circuit Load*
Lighting Load	3,000	800	2.0	1,200	83.9
Refrigerator Load	2,400	363	4.0	218	15.3
Water Pumps Load	300	770	20.0	12	0.8
Total Circuit Load				1,430	100.0

If this circuit is subjected to an interruption during normal operation, even though the interruption is of only 0.1 min duration, the circuit motor loads will be greater upon re-establishment of service than those which existed prior to the outage. As the time of the outage is extended more motor control devices will place motors in a starting position until finally, if the outage is long enough, all motor load is connected to the electric supply lines in a starting position.

Table I shows the calculated values of kva load during "motor starting" conditions immediately following circuit interruptions of various durations.

TABLE I

Outage (mins.)	.1	10	20	40	60
Lighting Load	1,200	1,200	1,200	1,200	1,200
Refrigerator Load	990	2,970	3,960	3,960	3,960
Water Pump Load	60	260	445	830	1,153
Total kva	2,250	4,430	5,605	5,990	6,313
% of Prior Circuit Load	157	309	392	418	442

After a period of time, dependent to a large extent upon the voltage recovery conditions of the circuit, the motors will automatically cut over to the running position. In the case of a very short interruption, the previous load conditions will be re-established in a matter of seconds but in cases of longer duration outages, loads considerably in excess of those existing prior to the interruption will be imposed upon the circuit for an appreciable period of time.

Table II shows the kva load due to "motor running" current demands after circuit interruptions of various durations.

TABLE II

Outage (mins.)	.1	10	20	40	60
Lighting Load	1,200	1,200	1,200	1,200	1,200
Refrigerator Load	218	654	872	872	872
Water Pump Load	12	50	89	166	231
Total kva	1,430	1,904	2,161	2,238	2,303
% of Prior Circuit Load	100	133	151	156	161

These abnormally high motor loads will continue until the pump and refrigerator load requirements have been satisfied, at which time load will drop to a subnormal value as a result of relatively undiversified "cut-off" operation of a large portion of the total motor load. The motor current demands will oscillate between abnormally high and subnormally low values, with decreasing amplitude until normal diversification has again been attained.

The calculated circuit current demands expressed in terms of per cent of prior circuit currents following circuit interruptions of various duration are shown graphically in Fig. 2. The dotted lines illustrate the current values anticipated after a 25-min interruption on the circuit under consideration.

With the large increases in current, subnormal voltages will occur on portions of the circuit. Assuming that the motor terminal voltage, during periods of normal circuit load, varies between 109 and 120 (for a normal 115 v system) according to a probability curve shown as "normal" on Fig. 3, the motor terminal voltages at the instant of re-establishment of the circuit after the 25-min interruption shown in Fig. 2 would be those shown in Curve entitled "Voltage With All Motors Attempting to Start." At this time only 46 per cent of the motors are receiving voltages high enough to assure satisfactory starting. As these motors reach running speed and the starting winding cuts out, the circuit load declines by the difference between starting and running loads for 46 per cent of the total motors and a new volt-

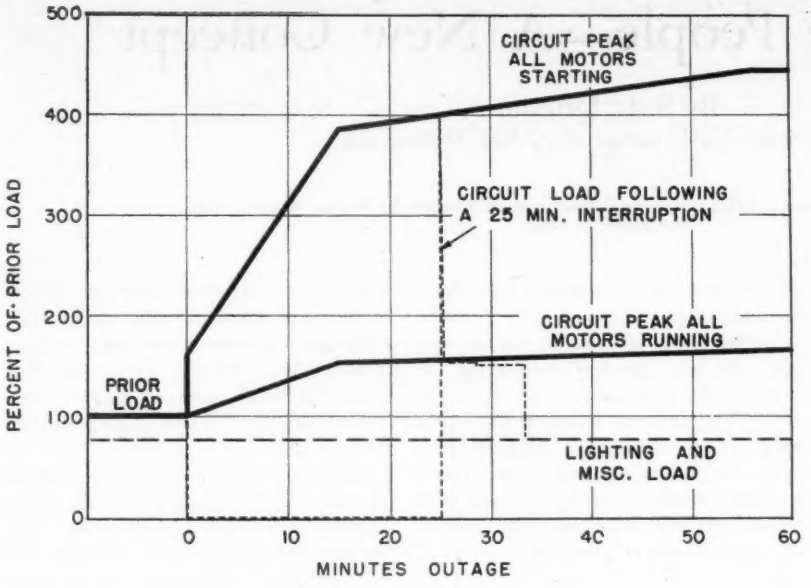

CIRCUIT PEAK ALL MOTORS STARTING
CIRCUIT LOAD FOLLOWING A 25 MIN. INTERRUPTION
CIRCUIT PEAK ALL MOTORS RUNNING
PRIOR LOAD
LIGHTING AND MISC. LOAD
PERCENT OF PRIOR LOAD
MINUTES OUTAGE

FIG. 2 Circuit current in percent of current load prior to outages of different duration.

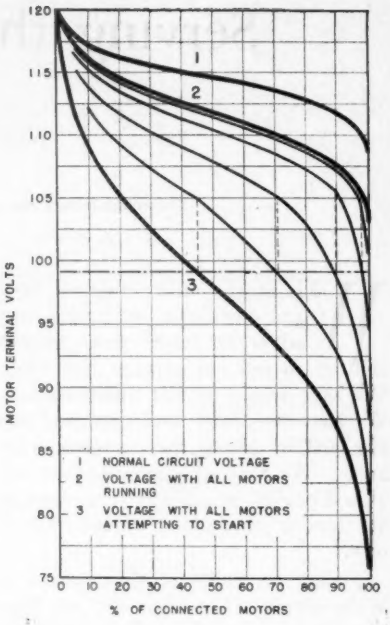

1 NORMAL CIRCUIT VOLTAGE
2 VOLTAGE WITH ALL MOTORS RUNNING
3 VOLTAGE WITH ALL MOTORS ATTEMPTING TO START
MOTOR TERMINAL VOLTS
% OF CONNECTED MOTORS

FIG. 3 Terminal voltages of motors after re energizing circuit following an extended outage.

age distribution is established for the entire circuit whereby an additional 25 per cent of the total number of motors receive adequate starting voltage. After these motors reach running speed another voltage distribution for the circuit is established and additional motors receive adequate starting voltage. This cycle is repeated until all motors are running and the circuit voltage distribution is shown on Curve "Voltage With All Motors Running." The total time required for all motors to attain "running" speed will vary with motor characteristics and available voltage. It is conceivable that under certain conditions of circuit loading and design, low voltage conditions may be sufficiently severe to cause serious damage to motors electrically distant from the supply source.

All of the preceding conclusions have been based on data derived from the hypothetical circuit having certain assumed load characteristics. In order that trends may be indicated for changes in circuit conditions, calculations were made to show the relationship of Diversity of Motor Load, Motor Load Percentage of Total Circuit Load and Increases in Normal Circuit Load permitted by Protective Devices. These data are shown in Fig. 4 for short time overloads and Fig. 5 for loads of longer periods.

These graphs show the effect of automatically controlled motor load diversification and area saturation upon circuit loads following a service interruption of sufficiently long duration to eliminate all diversity in the operation of the motors. For example, if the "pick-up" value of the relay controlling the feeder circuit breaker is 200 per cent of the rated capacity of the circuit, and the diversity in motor operation is 3, then the diversified demand of the motor load cannot exceed 50 per cent of the circuit capacity if we require the reestablishment of service to the entire circuit by the process of closing the feeder breaker. Any increase in the present motor load on this same circuit will require a reduction in diversity (which is highly improbable) or the raising of the tripping value of the relays. Similarly for the short time trip values of the relays, if these same load characteristics apply, the short time relay tripping values must be greater than 750 per cent of the circuit rating. The 500 per cent curve in Fig. 4 and the 160 per cent curve in Fig. 5 represents the characteristics of the relay in service at the time of interruption on the circuit for

(Continued on page 26)

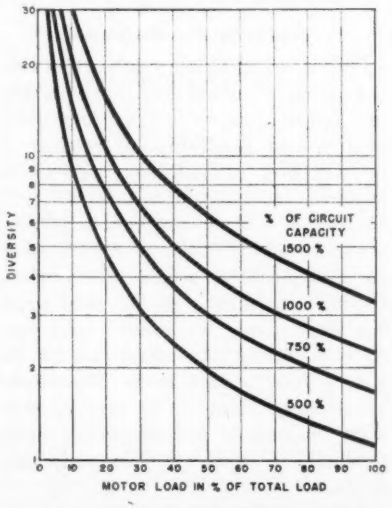


FIG. 4 Values of diversity of normal motor operation and percentage of normal circuit load represented by motor load for permissable increases above circuit capacity during MOTOR STARTING cycle following a circuit outage

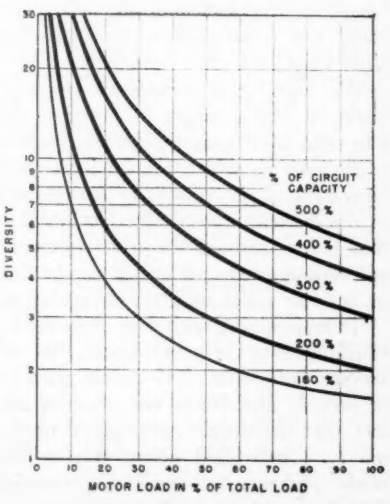


FIG. 5 Values of diversity of normal motor operation and percentage of normal circuit load represented by motor load for permissable increases above circuit capacity during MOTOR RUNNING cycle following a circuit outage

Serving the People—A New Concept

By S. L. Drumm
New Orleans Public Service, Inc., New Orleans, La.

Presented before the General Sales Conference, Southeastern Electric Exchange, Atlanta, Ga., November 8, 1946

WE of the utility business have, and justifiably so, prided ourselves for many years on our abilities to sell our services and rates. We have done it by fair trade practices. We have done it by rendering good service and by giving the customer every break. We have used an abundant and a good quality of publicity to accomplish our results. And it has worked. Up to now.

Today we find disturbing elements in the picture. The great war has done something to people's thinking. In shifting sands are etched new needs to be satisfied, new goals to be set up.

We are bound to ask ourselves the question: "Are our methods and tools adequate to the task of continuing to answer the many questions, fulfilling the many needs of PEOPLE—be they general public, employees, stockholders, legislators, or any of the other "publics" management must influence?"

Let's Assay Our Position

To answer this question fairly, let us further assay our position. Brief contemplation of the swiftly moving times brings about acute awareness of challenges to the principles for which we stand and responsibilities for defending these principles.

We know that somehow we must foster a strong effort to preserve the Christian ideal that individual freedom is the basis on which a great nation has been built. It is up to us to demonstrate to the American people the benefits that they receive through the privately-owned and business-managed utility, conducting its business under enlightened regulation.

In maintaining faith with ourselves by fulfilling such responsibilities, we are serving the people. The people *want* to be served. But let us not overlook the fact that the people have special needs, too . . . individual needs, even selfish needs, perhaps, but needs they remain. To discern their needs and to satisfy them is accomplishing a true public relations role, since laws as inviolate as those of supply and demand have shown all business to be founded on: Satisfactions.

Certainly, to do this is not an easy task. It is a complex undertaking because needs themselves are often complex, ill understood by even those who need. The accustomed organizational tools for informing people are found wanting; moreover, policy methods with respect to public relations often suffer in the light of newer practices.

An Operating Philosophy

Sound public relations practice, in the words of W. Howard Chase, becomes "an operating philosophy by which worthy institutions can reintegrate themselves into the basic aspirations of the people." Studied in action, organized public relations ultimately lead the investigator to conclude: "Here is a science; let us recognize it, use it. But let us use it properly." Paul Garrett, Vice President, General Motors Corporation, in describing that company's public relations machine, compares public relations to engineering as a science just as worthy of management's consideration. Perhaps we may go farther; just as psychology ultimately became recognized as the science of human behavior, public relations becomes the science of human behavior in business. There its need goes beyond the demands of profit alone, because whether we choose to or not, we of the utility business especially are finding ourselves "manufacturers" of a social product.

For example, it is commonly supposed that higher wages are the prime consideration of organized labor. Yet a survey by "Factory Management" in December, 1945, reveals that only 25 percent of industrial workers felt that higher wages were the principal remedy for labor difficulties, whereas 41 percent maintained "Cooperate with labor," or "Get closer to workers."

Labor, or to translate the word in its meaning to a company, employees—are only one of the "publics" which must be influenced favorably for the continuation of American business along lines as we know it. Customers and the general public are another, and stockholders, legislators, educators, creditors, and competitors still others. What do these other "publics" expect of private enterprise, and does the labor viewpoint offer a clue?

Close scrutiny points to a common ground of interpretation here for all the "publics" of business enterprise. May we not then interpolate: "cooperate with our 'publics,'" "get closer to our 'publics.'" Perhaps there is the thread that business seeks. Exploring the theory, we encounter significant relations that have a definite bearing on good business.

J. W. Corey, in a booklet published through the Public Information Center of the National Electrical Manufacturers' Association, makes the significant observation that the general public at present is greatly interested in BUSINESS. "People," he observes, "have a great deal of curiosity about how a business is run. They want to know about companies' plans and policies. They are interested in them from their *own* standpoint. They not only want to know what's going on, but 'What does it mean to us?'"

People Need to Be Needed

W. Howard Chase reaches the same conclusion in maintaining that even with the people's approval regarding price, quality, and availability of product or services, they will still vote you out of business. He drives home this point with an example of a certain chain in a Western state which was quite convinced of its acceptance by people of the state. Buying was active; profits were good. Yet these people, as citizens, came very close to voting this chain out of the state in favor of local stores. The people, he stresses, "need to be needed—they want business to manufacture a social product as well as the economic product."

Here, then, is another of our "publics," this time the general public, evidencing a desire for closer relation and closer cooperation with enterprise. Ap-

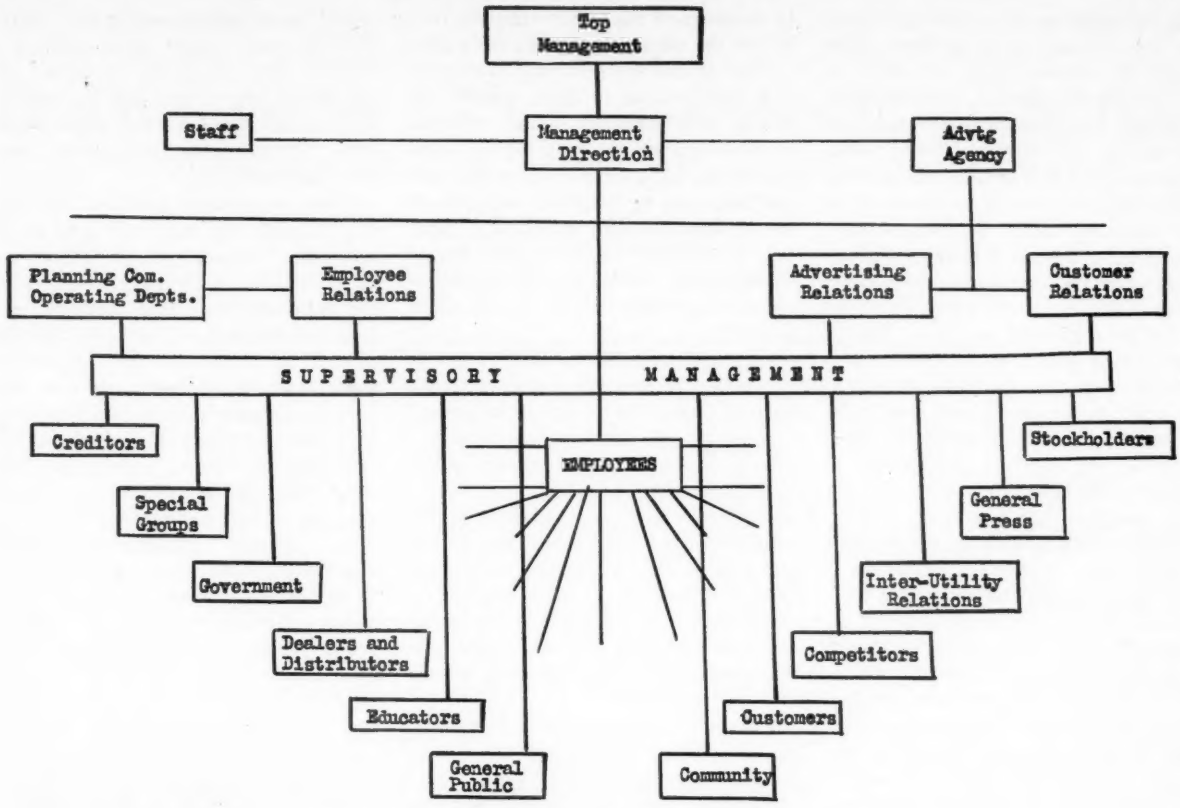


FIG. 1—PUBLIC RELATIONS ORGANIZATION CHART

parently "closeness" and "cooperativeness"—meaning as they do, understanding and sincerity—are at once become modern tenets of the scientific conduct of business. The weight of the problem, if this premise is accepted, resolves itself about a consideration of the type of facts which must be disseminated to employees, customers, stockholders, and the mediums management may employ to grow closer to these groups.

The People's Needs

But first let us examine our "tools" for doing the job in the light of conditions as they are. By and large, our equipment for informing our various "publics" has usually conformed to some such organizational pattern as can be illustrated by this chart.

It is evident at once that a relatively decentralized grouping of functions has certain limitations. While capable of producing good publicity, it was never designed or expected to transcend far the stage of "selling-for-profit." And yet today we need not search long to find there are new demands shaping up before us which have nothing to do with "selling-for-profit." The "people's needs" you might call them. Yet we must satisfy them to prosper ourselves.

"Bottom" Management

It is at once recognized that various forms of printed and spoken word as media for public relations expressions, such as the newspaper, radio, personal contact, ad infinitum, have well defined uses and need no special clarification here. And, the coordinated adaptation of these public relations forces into a single "voice" . . . telling the same story at the same time . . . requires centralized guidance and provides the test of maximum effectiveness in the direction of relations with all groups within the influence of management.

Even so, just as the far-flung company with "body" in one place but "mind" in another has been referred to as suffering from inadequacy, likewise does the company of any size, with dealings only from top management, suffer from removed contact with respect to the groups it must influence. Top management needs an intermediary then: one still representing its views, but capable of interpretation at the level of contact with the manifold outside groups. Such an intermediary might be termed "bottom" management, and is generally to be found at the Supervisory stage. Here is management in daily contact, on a broad scale, both directly and through employees, with customers, creditors, competitors, industry representatives, government, the public, etc. Here is management's longest arm, the stage beyond which the word of management passes to the "publics" to be influenced, and the stage at which first-hand expressions of the needs and desires of these "publics" are collected and the views of management disbursed. In short, here is the main exchange between the "publics" of management and itself.

Key Task for Supervisors

Naturally, and particularly because today our business of private enterprise faces the test of the people's will, the responsibility of this group assumes imposing proportions. Such a key task calls for knowledge and understanding of relations with all groups affected by a company beyond the ordinary coordination and guidance needed in public relations transactions. This Supervisory staff must be trained and be qualified to

train its immediate subordinates in what and how to say or write that which should be disseminated. It must be trained and be qualified to train those immediate subordinates to evaluate and pass on for the benefit of higher management that which should be collected.

But just as it has been demonstrated that forces of public relations, such as advertising, customer relations, and employee relations, accomplish most effective employment of the public relations voice when organized as a team through centralized guidance, so these supervisory personnel need the guidance of a central authority to exhibit integrated team-like qualities in accomplishing their share in the over-all objectives of planned public relations. Moreover, this group deserves organizational identity to depict its proper place of responsibility in the wheel of company public relations, and as a step in applying public relations thinking to every single phase of operations. For while it can be argued as a public relations principle that goodwill is the most valuable asset of any business, at least we should admit that public relations thinking should permeate the organization, which is to say more simply that top-flight public relations are particularly necessary to the utility company and that good public relations "begin at home."

As a framework for aligning the machinery of public relations, Fig. 1 is a chart which undertakes to show each segment properly placed with respect to the whole.

Examination of the diagram reveals a clear-cut placement of extra responsibility of a definite nature—as to public relations—on internal company forces. It puts public relations at the policy-making level, where it should rest. Through injection of supervisory management into the picture as a direct aid to top management, provision is made for extending the arm of management to maintain a closer relationship with the groups—internal and external—which management must influence.

Full provision is made for the control and funneling of facts to and from the outside groups to be influenced, which means, too, that the *type* of public relations facts marked for circulation or collection are subject to control. These provisions are doubly important when it is realized that effectiveness in public relations is largely a measure of advance scheduling of public relations events, and coordinated, timed follow-through by members of the public relations team to tell the same story at the same time.

Once set for the first time, indoctrination and training of those directly affected with company public relations becomes feasible on a systematic, company-wide basis. Public relations get-togethers can be planned, and gain in effectiveness through intervening guiding responsibility vested in the office of Management Direction—in turn, of course, responsible directly to the Chief Executive.

Organizational recognition of public relations—the scientific approach to the manufacture of the needed social product—is a type of thinking now setting a pattern in the American business world, as exemplified by such leading industries as General Motors, Standard Oil, Inland Steel, Railway Express, and significantly to us, Bell Telephone, which, under the "handicap" of being the largest corporation in the world and considered as of monopolistic character, nevertheless, manages enviable accomplishments in public relations.

As voiced by labor groups and the public, better understanding is a "must." For our part, better understanding is wanted with all of our "publics." So we accept. It is only logical, then, to find a better way—a patch which begins with organizational changes—to meet this challenge.

Once recognized, provided for, and ably directed, the impact of good public relations in action seems to become the dynamic drive in company life. Neither the personnel work that employee relations accomplishes, nor the publicity that advertising controls, nor the contact work done in customer relations, nor even the composite work of all of these forces serves to describe the task of company public relations. Only the combined efforts of *all* of these, to which must be added the active assistance of every company member—the whole brought into a directed and balanced relationship by a nucleus group whose reason for existence is over-all company public relations—only then can maximum effectiveness be achieved in establishing any company as a "good neighbor" in its community.

MISS JOAN WHITGIFT, RIGHT, AND MISS MAE WOODS, SECRETARY OF THE EDISON ELECTRIC INSTITUTE

Miss Whitgift, is spending 3 months in the U. S. under a scholarship established in electrical house-craft by the Caroline Haslett Trust, which will send an outstanding British home service director to observe home service methods in a foreign country every year.

"Home service work in England is handicapped by acute shortages of trained personnel and new appliances," Miss Whitgift, senior home service demonstrator of Central London Electricity, Ltd., reports. "Lack of food prevents public demonstrations of electrical cooking equipment in use. However, home economics will continue to be an important part of electric service in the future, whether power is supplied by privately-owned companies or a centralized government agency," she believes.

The Oklahoma Gas & Electric Company Method for Load Determination on Distribution Transformers

By Perry Shelley
Oklahoma Gas and Electric Company

Presented before the Forty-First Meeting of the Transmission & Distribution Committee, EEI, at Virginia Beach, Va., October 7, 8, 1946

THE Edison Electric Institute issued a report, No. H6, in March, 1941, entitled "Distribution Transformer Load Supervision" which covered the various methods then used for load determination. We were engaged at that time in developing the method now used by the Oklahoma Gas & Electric Company and were quite interested in the data given in that report. The O G & E method might be described as an extension or further development of some of the ideas expressed in the 1941 report. It is essentially an office record method and at the present time has been developed for use on transformers serving residential areas only.

Basic Facts and Figures

Two figures are required for making the load determination; these are:

1. The total number of customers served from a transformer.

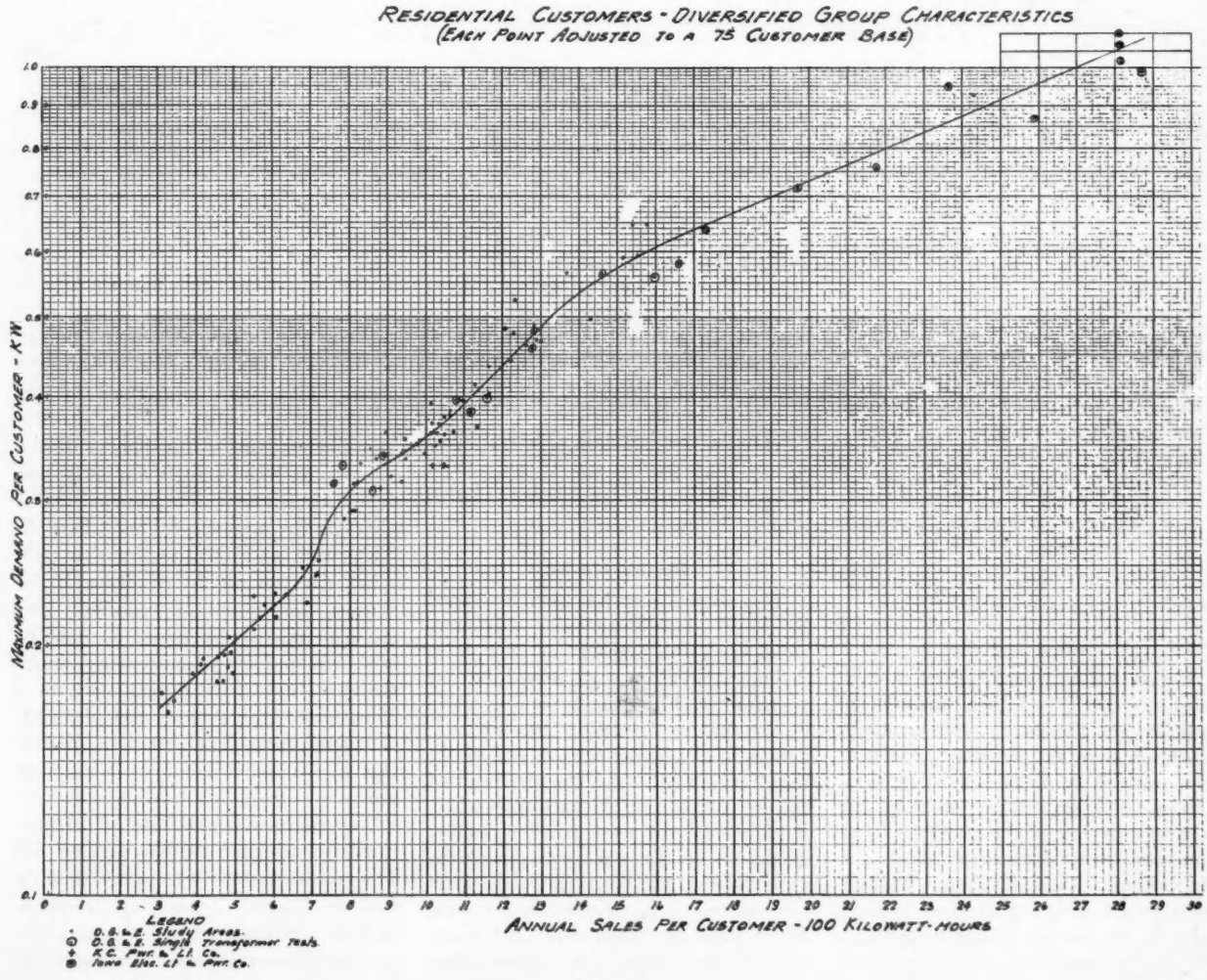

RESIDENTIAL CUSTOMERS - DIVERSIFIED GROUP CHARACTERISTICS
(EACH POINT ADJUSTED TO A 75 CUSTOMER BASE)
MAXIMUM DEMAND PER CUSTOMER - K.W.
ANNUAL SALES PER CUSTOMER - 100 KILOWATT-HOURS
LEGEND
O.G.&E. Study Areas.
O.G.&E. Single Transformer Tests.
K.C. Pwr. & Lt. Co.
Iowa Elec. Lt. & Pwr. Co.

Chart A

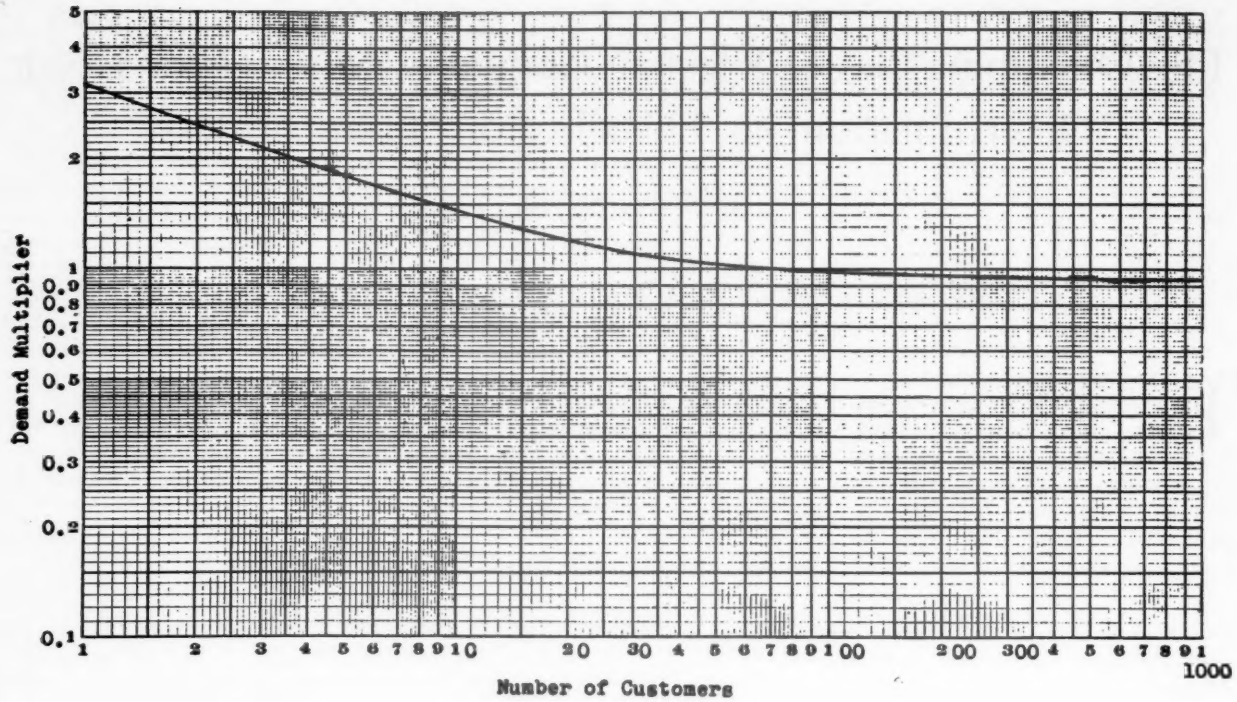


Chart B—Demand Multipliers—Residential Customer Groups (For 75 Customers, Multiplier = 1.0)

2. The total kilowatt hours used by these customers for a one-year period.

The basic data for the O G & E method has been continuously accumulated since 1932 when 11 special area study meters were installed on selected residential areas. The data obtained from these study areas were:

1. Kilowatt demand by 15 minute intervals.
2. Kilowatt hour input by weeks and years.
3. Kilowatt hour sales by months and years.

Plotting the Curve

Data covering over 21,000 customer-years experience had been accumulated by 1944, and these are plotted on Chart A. Each point on the chart represents one year's data from one study area. The total kilowatthour sales in the area was divided by the number of customers to give the average annual sales per customer. The maximum Kw demand recorded during the year was divided by the number of customers to get the average maximum demand per customer. This was corrected to a 75-customer-group base for plotting on the chart by dividing by a demand factor (Chart B); which corrects for the different diversity factor of groups having other than 75 customers. Seventy-five was chosen as the base because this is somewhat greater than the number of customers that will be served from any one transformer.

With a few exceptions, every point lies within plus or minus 10 per cent of the average curve that has been drawn on the chart.

Routine Method

The routine that has been developed by the O G & E for using this curve starts with the preparation of a form defining the exact area served by one transformer. This usually requires a trip to the field to determine the street addresses of the houses at each end of the secondary. The form is then transmitted to the Accounting Department where the kilowatthours used, and the number of months' service was active during the previous year, are recorded on the form for each meter installation in the area. These data are taken from the meter readers' route books. The form is then returned to the Operating Department where the total months is divided by 12 to give the average number of customers and the total kilowatthours is divided by the average number of customers to give the average annual sales per customer. The maximum demand per customer can then be read from the chart. This, when multiplied by the number of customers and the demand multiplier factor for this number of customers, gives the annual Kw peak load on the transformer. The demand multiplier factors are shown on Chart B. This curve is a composite of various published data on diversified demands for various size groups of consumers and test data that was obtained on some of our own residential customers. Since the curve on Chart A was made to a 75-customer-group base, the demand-multiplier curve has been positioned so that the factor is 1 for a 75-customer group.

The annual Kw peak load is corrected to Kva by dividing the Kw peak by .95. This ratio between Kw peak and Kva peak corresponds to power factor except that the two peaks are not always simultaneous. This ratio was obtained from Kw and Kva meter installations made

on nine different transformers giving 25 transformer-years' experience.

The two curves and the power-factor-correction factor have all been combined on the alignment Chart C, which is more convenient to use. A straight line drawn between the number of customers and the annual kilowatthour sales per customer on this chart, will intersect the center scale at the annual, maximum Kva demand on the transformer.

Keeping Curves Up-to-Date

The various curves and factors are kept abreast of current load characteristics by maintaining continuous meter installations on five different transformers. From these installations of thermally-lagged, graphic meters we obtain the following data on the transformer total load.

1—Kw Demand
2—Kva Demand
3—Kilowatthour input to the secondary by weeks and years

The Accounting Department supplies data on the number of customers served by each transformer and the annual kilowatthours sold to each of these customers.

We have found that our method of computing demands, based on data obtained in Oklahoma, may be applied to areas in distant parts of the country with surprising accuracy. For example, Mr. Brosnan gave data on the Morningside Subdivision in Buffalo, New York, at the February, 1946, meeting of this committee. He reported a measured annual peak demand for the Subdivision of 66 Kw while our statistical method gave a computed demand of 67.5 Kv, the error in this case being 2.3 percent.

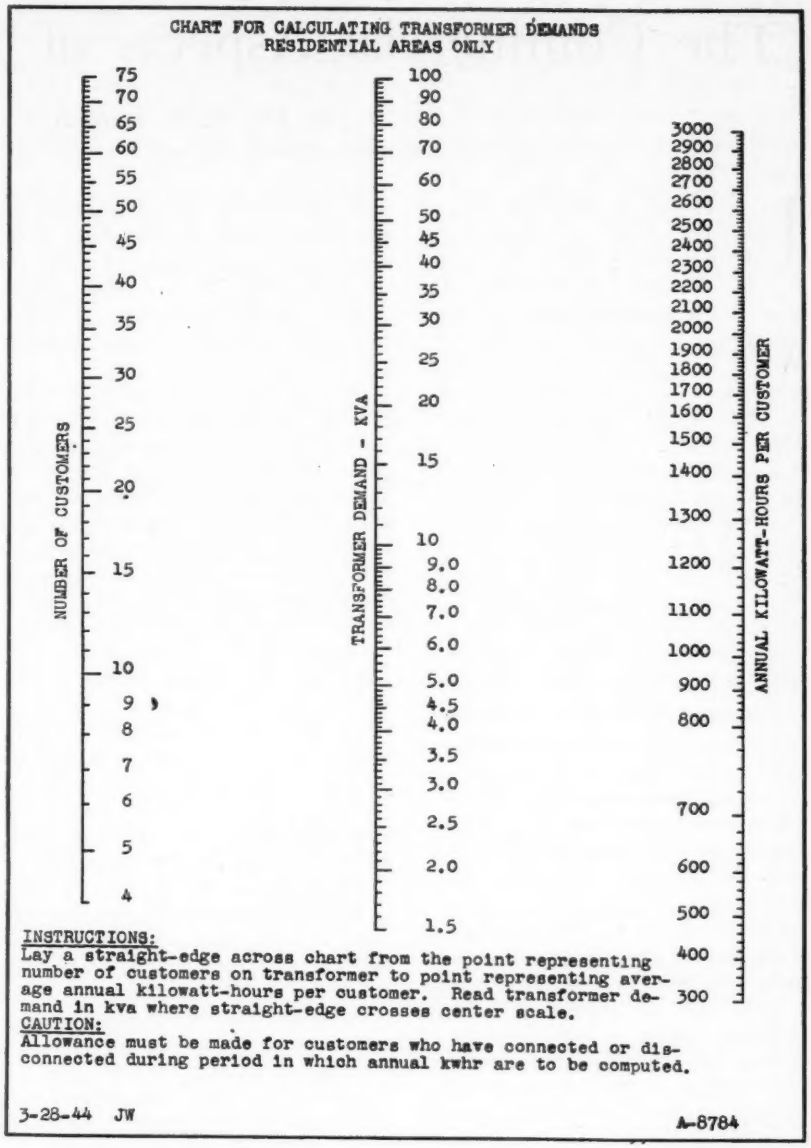


Chart C

Method Costs & Advantages

The cost of this method as used by our company is comparable to the cost of the two-trip demand instrument-test method. Records covering load determination on 448 transformers showed an average of 1.7 man-hours required per transformer tested. This was divided into 1.5 man-hours supplied by the Operating Department and .2 man-hours supplied by the Accounting Department.

We believe that the O G & E method of transformer load determination possesses several significant advantages over any of the other methods that have been used on our system; these are:

1. Greater Accuracy. Check tests made on individual transformers with continuously installed meters show that the peak load determined statistically will not be more than 10 percent from the peak load actually occurring on the transformer.

2. Test schedules are not limited by available instruments. This permits a greatly expanded load determination program to be carried on if such need arises. We are finding this an advantage now because many severe overload conditions have recently developed on our system. Also, a large investment in testing equipment is not required and instrument maintenance and repair costs are avoided.

3. Load testing is not limited to some peak-load season of the year, and a uniform program can usually be carried on.

4. Loads that existed in past years can be determined from the records, thus permitting analysis of transformers that failed from overload being used as a guide to proper transformer loading practices.

The Commercial Aspects of the Heat Pump

By Dr. E. N. Kemler

Head, Engineering Research Division, Southern Research Institute, Birmingham, Ala.

IT is difficult to emphasize the importance of the heat pump to the electric utilities and to the public. W. M. Stanley, Vice-President, Alabama Power Company, estimates a potential annual market of 2.5 billion kwhr per year from new homes in the upper price bracket to be built during the next 10 years in six Southeastern States.[1] This is equal to the total residential sales in these same states in 1944. To the electric utilities, the heat pump, therefore, offers a potential load far exceeding that from any other source in the home. To the public, it offers for the first time at a competitive cost, automatic year-round home comfort; that is, winter heating and summer cooling with the same equipment, utilizing electricity.

Commercial Reality of the Heat Pump

The heat pump is a commercial reality and a definite factor in the future heating and air conditioning fields. To many, this statement will come as a surprise. The majority of those who will challenge this statement have never seen a heat-pump installation, and certainly not one of modern design. The recent survey of the heating and ventilating industry which was made for the Southeastern Electric Exchange showed that a considerable number of manufacturers of heating and ventilating equipment had no conception of the heat pump. This situation is fortunately being rapidly corrected through the activities of the technical press and in many areas through the news items appearing in the daily papers.

The speed with which the heat pump adapts itself in the home will depend to some extent on the ability of manufacturers to get into production and in part on the efforts of manufacturers of the equipment and the utilities in seeing that heat pump equipment is properly applied. A year ago the problem most discussed by those interested in the heat pump was the question as to whether suitable mechanical equipment could be developed to make the heat pump a mechanical reality. Industry is rapidly answering this problem with both production and experimental units. Today the two serious problems confronting widespread application to the heat pump are the development of an adequate source of heat, and the development of proper application methods to insure customer satisfaction.

Any discussion of the commercial possibilities of the heat pump must give consideration to all parties involved. The party most involved is, of course, the homeowner, because he is the one who must purchase the unit and pay the power bills. His complete satisfaction with this type of equipment is of paramount importance if the heat pump is to have widespread application. Perhaps second on the list is the electric utility furnishing the electric service to the homeowner. To the utility, the heat-pump load must be economically satisfactory in order to make it possible to give the customer the type of service which he needs in order to insure long time satisfaction with the heat pump. Failure to make the heat-pump load an attractive one to the utilities can result in serious handicap to this type of equipment through failure to engage their full support. Finally, the heat pump must offer to the manufacturing industry a suitable market in order for them to be able to do the necessary research work to continually develop into the heat pump those things which the homeowner and utilities desire. The heat pump appears at the present time to offer sufficient incentive to each of these groups to insure development of a new device to fill a need in the home. The following discussion will consider the influence of the heat pump on each of these groups.

Year-Round Electric Heating Comfort

The heat pump offers to the homeowner for the first time an electrically powered, automatic, year-round comfort producing machine. This type of electrical, automatic comfort is not practical in any other way. It can only be approximated by a heating system plus a cooling system. The heat pump offers a type of heating which is not otherwise generally available, that is, combustionless heat. The complete elimination of combustion with all its unsatisfactory characteristics such as dust, dirt, smoke, explosion and fire hazards, makes the heat pump an unusually attractive type of heating for the home, as well as for commercial establishments. The heat pump also gives cooling with the same equipment. This means that the heat pump has a decided economic advantage from an investment viewpoint. The cooling function as performed by the heat pump again offers to the homeowner something which has not been obtainable up to the present time. One of the important developments which manufacturers of heat pumps have made is that of making the operation of the system completely automatic. The equipment heats or cools as dictated by the thermostat without attention by the homeowner. This means complete freedom from worry or attention by the homeowner, i.e., no valves to turn, no switches to remember to turn on, no ashes or clinkers to carry, etc.

Consumer Requirements

The heat pump is the only practical way in which the homeowner can have *electrical* home heating at reasonable costs. To be successful as a home device the heat pump must meet some very exacting requirements. These are: (1) high reliability, (2) economical performance, (3) reasonable first cost, (4) low operating cost, (5) compactness, (6) neatness, (7) quiet operation, and (8) furnish satisfactory home comfort. The first six of these items have been discussed in detail by Mr. Sporn.[2] The last two items are also of importance for complete customer satisfaction. Of these, the last is the most difficult to attain because of personal factors and problems of evaluation.

In developing customer acceptance there is always the problem of assuring that the radically new equipment will give satisfactory service. The excellent record which the household refrigerator has made, both through giving excellent performance and trouble-free service, set a precedent for this type of equipment upon which the utilities and manufacturers can capitalize in promoting rapid customer acceptance of the heat pump in the home.

For most of the area served by the

[1] W. M. Stanley, "Do We Really Want An All-Electric Home?" Address before Southeastern Electric Exchange.

[2] Philip Sporn, "Heat Pump," Report and Program, *Electrical World*, April 27, 1946.

Southeastern Electric Exchange, the heat pump will be sold on the basis of its ability to furnish heating. Cooling will be an added sales argument. Everyone in this region needs some form of heating. Many would like to have cooling if it would give satisfactory comfort and could be obtained economically. In lower Florida cooling assumes a more important place in the year-round picture and would be a more important factor in the selling of the heat pump in that area. Many early commercial cooling plants were poorly designed and gave the public a poor impression of the comfort to be achieved by summer cooling. The heat pump applications must be properly made if these impressions are to be overcome and home cooling is to become popular.

Customer acceptance in order to continue and to grow, necessitates, of course, continued attention to the customer's requirements. One of the big problems ahead, both for manufacturers of this type of equipment and for the utilities having an indirect responsibility in the development of this market, will be to carry out research work along lines adapting the equipment to meet the customer's requirements. The mechanical equipment which is available today should give service entirely satisfactory, and performance which is within the present day requirement. While changes in the heat pump will be made in the future, the majority of these changes will come, not through any radical changes in design, or radical changes in operating characteristics, but rather in better adapting the equipment to suit the customer's desires. Heat-pump developments therefore are to be expected, not because of deficiencies of present day equipment so much, as in extended requirements.

Practical Competitive Position

It is important to know whether the heat pump as a competitive device would offer the electric utilities the type of load and the amount of revenue which would permit them to give a type of service to the homeowner necessary to insure proper customer relations. J. M. Barry, Vice President of the Alabama Power Company, says, "Year-round air conditioning (summer cooling plus winter heating) could be made competitive, service considered, at rates between 1c and 2c per kwhr."[3] In view of current trends in cost of coal and oil, it appears that at a rate of about 2c per kwhr the heat pump would be competitive for heating within the limits required.

As indicated previously, it is of interest to consider what the heat pump offers to the manufacturing industry. If the heat pump does not offer sufficient sales volume or an attractive type of market to the manufacturing industry, here again development of the heat pump can bog down and stay on the basis of a job shop production. There is every indication through pre-customer acceptance and in the intense general interest in the heat pump that it will offer to the industry a greatly expanded market. The package type of heat pump offers itself to assembly line production on a mass production scale. Being a package-type equipment, it offers many advantages to the dealer both from the standpoint of installation and servicing. For commercial establishments, the package-type heat pump is a practical means of obtaining year-round air conditioning, inasmuch as these units can be put in by the renter and moved if his lease is not renewed. The package-type heat pump has a place in the general air conditioning field and appears to offer many advantages over the two-plant system for year-round air conditioning. It would in many cases justify itself as a heating unit alone because of the desirable characteristics which it offers. All these factors add up to making the heat pump appear to be a very desirable product from a manufacturing, distribution, and selling standpoint.

The speed and extent to which the heat pump will be accepted as a home air conditioning device will depend largely on how actively the manufacturer and the electric utilities promote the sales of a year-round home air conditioning system. Certainly their job has been made much easier by the widespread installation of summer cooling devices in large department stores, offices, plants, etc. The progress also depends largely on the ability of the manufacturers to produce a suitable packaged-type heat pump for both home and commercial uses and on seeing that this equipment is properly applied to give satisfactory performance. A year ago there was some question as to the availability of suitable mechanical equipment. This question has largely been answered by the existing heat pump installations which have proved to be mechanically sound. The major problems confronting the widespread use of the heat pump today are the development of a suitable source of heat and the experience with a greater number of installations to permit a more intelligent application to insure complete satisfaction of the users.

One of the important questions in the development of the heat pump is the potential market. This obviously depends upon the initial and operating costs of the equipment as well as its satisfactory performance. It is difficult to predict what a typical heat pump installation will cost. However, it has been estimated that the cost of a heat pump installed will be less than the cost of a conventional heating plant plus a cooling system. The National Association of Home Builders recently stated that summer cooling was economically feasible for homes costing $6,000 and over. These homes may then be reasonably considered on prospects for heat-pump installations. It is estimated that there will be over 8 million homes built in the next 10 years with 30 per cent costing more than $6,000. The theoretical market for heat pumps for new homes alone will then be in excess of 2 million.

Heat Pump Manufacturers

Manufacturers of heat pumps are making rapid progress. Two of these manufacturers are currently delivering a limited production of units. Both have had units in operation for a sufficient length of time to show their general suitability for year-round use. Muncie Gear Works, of Muncie, Ind., have reported a probable production in excess of 200 units for 1946. These units are going primarily into residences. The units produced to date are installed mostly in Indiana with a considerable number now going into the TVA area. Some of these units will soon be installed in northern New York. The Muncie Gear Works expect to expand the distribution of these units as rapidly as manufacturing facilities permit. They have a projected program of 10,000 units for 1947 if equipment and materials can be obtained. Present commitments insure a production of at least 5000 units. The Drayer-Hanson Company, of Los Angeles, report a probable production in excess of 500 units for 1946. These units are going mostly into commercial establishments. These were first distributed in California, Arizona, and Nevada. More recently a considerable number of units have gone into the region served by the Florida Power Cor-

[3] J. M. Barry, "Electric House Heating in the South."

poration. Some of these units have recently been received and will be installed in the area served by the Alabama Power Company. Other units are in service in Louisiana and Texas. This company has a projected program of 6000 units for 1947 if equipment and materials can be obtained.

In discussing a new device such as the heat pump, one is always concerned whether the equipment which is currently available represents all that can be achieved by this type of equipment, or whether there are future possibilities of development which would extend the market or add other features to increase consumer acceptance as required. The heat pump at this time, while a satisfactory mechanical unit which will fill current requirements, has the possibility of development to include new features. Being a year-round device, it is adaptable to utilizing such new developments as electrostatic dust precipitators. It is conceivable that a house of the future properly designed and equipped with an electrostatic dust precipitator, for example, would give those who are bothered with pollen, dust, allergies, etc., complete freedom from these factors. Likewise, because of its year-round feature, the heat pump would be easily tied in with bacteria elimination equipment as it becomes developed and available for the home. As previously indicated, as the heat pump gains more widespread use, there will be increasing demands on it. The heat pump appears to be very well adapted to improvements both in performance and control. As the customer requirements develop, the ingenuity of the industry will undoubtedly find ways to make possible simply and economically individual room control, or other similar factors as might be required.

The heat pump being a year-round device opens new opportunities for home development along radically new lines. The ability to furnish at all times a controlled atmosphere will permit the architect to design an ideal type home. This home can take advantage of all the features of dustless comfort, germ elimination and modern lighting. For the first time, the all-electric home is a practical possibility. The challenge is out to the architects through better design to make available to the homeowner this new opportunity for year-round comfort. Through design simplification it is possible that the heat pump could be made available at a lower cost (assuming cost reduction of home construction through simplification) than when using conventional heating. In discussing the heat pump it should be kept in mind that it is something new only insofar as the function it performs is concerned. The elements which go to make up the heat pump are all standard refrigeration elements.

The extent to which the heat pump will replace existing methods of heating and cooling will depend on:

1. How aggressive and ingenious manufacturers of heat-pump equipment are in developing equipment to fit a wide range of applications both from a mechanical and cost standpoint.
2. The success and speed with which the many application problems involved are solved.
3. The effort which manufacturers of conventional heating and cooling equipment make to improve their equipment by adapting it to meet customers' desires.

Charles M. Cohn

CHARLES M. COHN, Chairman of the Board of Directors of Consolidated Gas Light and Power of Baltimore died Dec. 5 after a short illness. Born on April 25, 1873, Mr. Cohn was educated in Baltimore. He graduated in Law at the Business College in 1893 and was admitted to the Bar in 1895.

MR. COHN

In 1897 he graduated from Loyola College with an A. B. Degree. In 1899 he was awarded an M. A. Degree by the same College, and the Honorary Degree of Doctor of Laws in 1942.

He entered the employ of the Consolidated Gas Company of Baltimore, a predecessor of the present Company, in 1885, when that company was engaged solely in supplying gas for illumination to residences, a few commercial establishments, and for street lighting. Baltimore was at that time a city of only thirty-one square miles, a portion of which was served by the Gas Company. The electric business was just beginning. In 1906 the electric company was merged with the gas company, forming the present Consolidated Gas Electric Light and Power Company of Baltimore. Mr. Cohn, who had been Secretary of the old gas company, was elected Secretary of the new company at that time and in 1907 was elected a Director of the Company.

The growth of the Company was rapid. Combined electric and gas revenues climbed from $4,000,000 in 1907 to over $54,000,000 in 1945. When Mr. Cohn was first employed by the Company in 1885, its gross revenues were about $1,000,000; its capital structure was about $10,000,000. The Company now has a balance sheet total of property, working assets and investments of $200,000,000.

In 1910 Mr. Cohn was elected Vice-President and General Manager and later in the same year became Vice-President in charge of the Gas Division. He was made a member of the Executive Committee in 1912 and in 1931 was elected Executive Vice-President. This office he held until 1942, at which time he was made President of the Company.

In 1943 he was made Chairman of the Board and President, holding these offices until 1946, when at his request he retired as President but continued to serve as Chairman of the Board.

Mr. Cohn was a member of the Executive Committee and a Director of the Fidelity Trust Company and a former member of the Executive Committee of the Industrial Building Company.

He was also a former director of the Baltimore Association of Commerce and the American Gas Association.

Home Service Programs

By S. S. Bradford

Promotional Manager, The Potomac Edison Company, Hagerstown, Md.

Presented before the Sales Section Meeting, Southeastern Electric Exchange, Atlanta, Ga., Nov. 6, 1946

LET'S start with what some may accept as a definition of Home Service—"Service to present and future housewives directed to stimulate understanding, appreciation and use of electricity in lessening labor, increasing convenience and comfort and improving home-making results, at low cost."

In the early years of Home Service activity the work centered largely around the electric range and refrigerator and permitted most of the advisors' time to be spent with our customers, individually and in groups. As new home uses of electricity have been developed we have found additional activities for our Home Service group, and also, have combined Home Lighting with Home Service work. Complete kitchen modernization and electrification now requires our attention. Automatic cycle washers and related hot-water requirements will demand attention.

What is Home Service?

Let's expand that Home Service definition into what it requires of a Home Service Advisor today, if she does many of the things some of us think that she should do:

1. She must be able to plan and perform her work in coordination with Company policies and programs.
2. She must deserve and hold the respect of adults in groups and as individuals and at the same time be flexible enough to stimulate the interest and hold the attention of young people.
3. She needs to personalize the Company to the customer, at times being called upon through customer requests and complaints to tactfully represent departments with the details of which she is none too familiar.
4. She must do a salesman's job, except for getting the order. Helping and working for all dealers alike.
5. Concerning foods she must know nutritional values in marketing and preparation and how to refrigerate, freeze, preserve, can, prepare, serve and dispose of waste, and what it means to do these things electrically.
6. Then she must know the electric way and its advantages in dish and pan washing, clothes washing, drying and ironing and how to relate the electric hot-water supply to these needs.
7. She needs to know good lighting and how to blend it with the esthetic and artistic ideas of others.
8. Then comes the modern kitchen and the making of layouts to meet individual customer wishes.
9. All of this brings wiring problems and the Home Service Advisor wants to know how to appreciate the customers' present and reasonable future wiring requirements, as well as how to picture and describe their needs convincingly. Then, how to prescribe for them.
10. And there are other things that you or I can add that we feel she should do, including minor appliance repairs.

In fact the combination Home Service and Lighting Advisor (and that's the way we like her) starts with the floor, goes up and all around the wall and then covers the ceiling. She is the original "cubist."

Now, in doing these things she is doing what her education and specialized training have qualified her to do. But, if she does detail kitchen layout work, prepares wiring plans and does other work necessitating considerable desk time as well as adding to the diversification of her field work, we then need to increase the number of advisors to get the same customer coverage that we had before adding these things. Or we may add desk specialists to do the kitchen, wiring and other layout work. Or again, some of us may find it advisable to simplify her kitchen modernization work and her wiring work, while developing the cooperation of other interested groups in taking up this work where we leave off.

Simplified Basic Program

As an example of what I call simplification we ask our Home Service Advisors to do two basic things concerning kitchen modernization and adequate wiring:

1. Create a basic desire for modern electric kitchens. To help the customer fulfill this desire we will use Reddy Kilowatt's "Let's Design A Modern Kitchen With You," as developed by the Kansas Gas and Electric Company. This we feel will usually require a minimum of time with individual customers while rendering service to the extent needed.

   We are experimenting with the new Schrader Minicraft miniature kitchen with loose units, scaled 1" to the foot, and feel that this also has great possibilities, both in the Home Service Hall and on the sales floor, although how it will help save time with the individual customer is not yet clear to us. In this way we believe we can stimulate and guide the customer without doing the detail layout work, except in unusual cases.
2. Create a basic appreciation of and a desire for adequate wiring when adding appreciable new load, modernizing the home or building a new home. To supplement our own presentations we use the Westinghouse-Disney film "Dawn of Better Living" and we are counting strongly on a demonstration using the Westinghouse three dimensional display "4 Degrees of Electrical Living," which has been added to the demonstration equipment of each of our Home Service Advisors. We believe that this association of different electric appliance groups with different electric wiring needs, properly presented will leave the one basic thought in the housewife's mind "I must have adequate wiring."

How to Carry Out the Program

Then to satisfy these basic desires we:

1. Direct customers to suppliers of modern electric kitchen equipment.
2. Hold meetings two to four times a year with electrical contractors showing and selling them on how they can serve and profit by installing adequate wiring in homes and on farms. Also, working with

builders, stimulating both modern kitchens and adequate wiring. Real progress is being made. Where contractors and builders need wiring layout help this is done by commercial representatives, directly on their building blue prints, with a minimum time requirement.

Now, all this simply means that if new activities are increasingly assigned to Home Service Advisors, without the removal of old activities, we cannot expect the same customer coverage and we may endanger the quality of coverage needed for things basic to customer service and to us. Of course, greatly increased numbers of Advisors may be your answer. Most probably it isn't.

Maximum Coverage per Advisor

And that brings up the question: "What is the maximum number of customers per Home Service Advisor to produce best results?" I wonder who knows. Certainly I do not. But, let's think about it—the first consideration is: "What do you want your Home Service Advisor to do, and does she operate in a concentrated or a rural area?" Think back, about those duties that some companies may have assigned to the Home Service Advisor, as previously outlined—maybe Home Service only—maybe combination Home Service and Lighting. Certainly, if she is to perform all of them with reasonable completeness, and without the help of specialists we can assign one Advisor to each 1,000 to 1,500 accounts and not have too heavy a coverage. Now start modifying and compromising, as you must, and what you and I require will begin to vary both as to type of activity and completeness of performance. While we both started with the same base we now develop divergent requirements. Maybe your area is largely metropolitan and mine is rural. Isn't the practicable answer, one that Company management will be sympathetic to, built around the following considerations:

1. How many Home Service Advisors do you now have; what are you asking them to do?
2. Study their present duties and accomplishments in relation to the possible thoroughness of performance.
3. Determine those activities and procedures that you feel should be continued, those that should be discontinued; those that should be modified. Those that should be added.
4. Analyze the experience of your organization, their individual capabilities; what turnover may be expected. The training and experience needed for a new advisor to function properly. Then try to schedule and provide for indicated replacements.
5. Then based on these things, your experience and the experience of supervisors concerned, the type of territory you cover, and efficient use of travel time, determine the organization that you feel to be necessary.

With such a study, carefully prepared and supported by facts and good judgment won't we have an organization program that can be fairly presented to and considered by our management! What if the resulting increase we recommend is jolting. What if we are disappointed in the extent of immediate approval. We no doubt have a progressive step-by-step program to fall back on, if necessary.

Now if we still need figures from other companies we have the informational and fact-gathering facilities of our Southeastern Electric Exchange to call on. What John Talley does not have I am sure he can get, within reason.

A recent survey among certain companies that operate in Pennsylvania, Maryland, West Virginia and Virginia shows the following residential customers per Home Service Advisor—for rural areas having a number of small cities the number is from 6,000 customers to 12,000 customers per Advisor—for companies dominated by a large metropolitan city the number of residential customers per Advisor tends to be higher. One source gives the national average as 4,000 to 5,000 customers per Advisor, ranging from 2,400 to 8,000 per Advisor. Actually, our opportunity and need for working with young people in schools and other youth groups is so great that a large number of these young people need to be added to our customer total.

Home Service Calls

"What home calls should the Home Service Advisor make?" Again, the kind of area you serve, your Company policies and the degree of different electric appliance saturation will need to control. However, how about the following for a typical lineup?

1. *Equipment Demonstration Calls*—new users of the electric range top the list. The customer could cook satisfactorily without our help, but our calls serve to build her confidence quickly, to build good will, to lay the ground work for developing other electric appliance prospects and for getting good lighting in use. As a rule no cooking needs to be done, but our explanation of the most satisfactory utensils to use, of the various cooking heats, of the special uses of the economy cooker, of how to prepare oven meals and make full use of time-releasing features, of uniform time and temperature cooking and the like, all make possible a greater satisfaction than would otherwise exist. Your experience, like ours, may make it desirable that first range demonstration calls be made 2 to 4 days after the range has been installed. The housewife has then had time to develop questions through use. A second call after another week or two is usually desirable. At this time the contact can usually be extended to include lighting both in the kitchen and in the home to the extent that your program contemplates. It is also desirable to call on those housewives who replace old electric ranges with new models to insure their knowing of all the good and new features of these ranges. Again, there is the opportunity to develop the need and use, of good lighting at study, reading and work centers in the home.

These range demonstration calls also offer excellent opportunities to develop home group demonstrations in the homes of new range users, while the users are most enthused about their new purchase. This is particularly true in areas where no other demonstration center is readily available.

2. *Calls for demonstration* of other appliances such as frozen food units, automatic cycle washers, ironers, etc., as local policy dictates.

3. *Survey Calls*—made on existing range users, especially those having old electric ranges, to assure proper maintenance, to inform concerning new electric range developments, other electric appliances, kitchen modernization and wiring. To generally insure customer satisfaction, continued use of existing appliances and, to stimulate interest in new developments, as well as in good lighting.

4. *Key People Survey*—a planned coverage of all housewives who are civic leaders, church leaders, club presidents, leaders of farm womens' clubs, Home Economics teachers, county demonstrators and the like to insure as many using electric ranges and other electric equipment as possible. For this the following procedure is suggested:

(a) Prepare the list of names, using the help of appropriate utility workers, Chamber of Commerce, county demonstrators, etc.

(b) Develop a simple form for recording the desired information for each person called on, to be prepared after leaving each home.

(c) A control form for sales follow-up by your own sales supervisors or other dealers.

(d) Home Service Advisors to make the calls, getting access to kitchen whenever possible for observation and developing user and attitude information. Invitations to general and special group demonstrations can be given at this time, or an offer can be made to present one of our programs to her group. (This plan offers particular advantage in meeting "Bottled Gas" competition.)

(e) About five weeks or more after calling on a key person, turn the form over to the appropriate sales organization for sales follow-up. The time interval is to disassociate the salesman's visit from the visit of the Home Service Advisor. Salesmen are not to refer to the Advisor's visit.

5. *Complaint Calls*—these are most important. The Home Service Advisors need to localize the cause of the complaint and either correct the cause, arrange for its correction or give satisfactory explanations. It is well to have a standard cooking recipe, probably a cake, that when baked, will show up the trouble and aid in detecting its cause. When our service department or another dealer's needs to be brought into the picture, save the details for that department. Do not discuss them with the customer.

6. *Lighting survey and recommendation calls*—to be made in association with calls for other purposes, where customer is reasonably receptive. Also, calls solely for lighting promotion.

7. *Where time will permit calls on brides* and on recent mothers may prove effective, although special group demonstrations for such individuals will probably be just as effective and will save time.

8. *Not infrequently* there is occasion to develop special survey information in connection with Home Service work. Such special surveys usually offer an opportunity to include some phase of regular Home Service work, such as invitations to group demonstrations, arrangements for Home Lighting calls and the like.

Cooking School Objectives

"Does the Cooking School Have a Place in Load Building and Customer Relations?" First, let's consider the original Home Service group promotional effort—Cooking Schools. As such, haven't they served their purpose! All group range demonstrations usually require cooking, but shouldn't we avoid calling them "Cooking Schools" and conducting them as such. What we really do is to cook to demonstrate the electric range and its advantages. Furthermore, aren't we including the other electric appliances, aren't we demonstrating food preparation for electric refrigeration, food preparation for electric freezing and the freezing processes, preparation of electric-refrigerated or frozen food for cooking—and the cooking process, the electric disposal of food waste and the electric washing of utensils and table ware. The actual cooking itself is to demonstrate the freedom (not new) that has always been associated with safe, clean electric cooking—time releasing, automatic, uniform temperature, quality results. Yes—some cooking as such, the giving of recipes and the telling of the nutrition story needs to be included. This is to hold the housewife's interest and to make the demonstration possible. But, shouldn't these features generally be the means rather than the objective?

Demonstrations with Other Agencies

Occasionally large cooking demonstrations for hundreds of people, may be desirable to stimulate general background interest. This is especially true when they are put on by some agency with which we like to cooperate, such as the local newspaper. In such cases participation by our Home Service Advisors and the loaning of electric equipment is usually desirable. However, such cooking schools seems to be more in the general advertising and publicity field, rather than in the specific promotional field.

Smaller groups of 20 to 40 are more intimate, especially if the demonstration is designed to make it so. Friendliness can be stimulated in the development of questions as an aid in arousing the interest of all present. Smaller demonstration groups permit inspection of the processes, results and equipment. They permit the developing and qualifying of specific prospects.

So, as we see it (and some others feel differently about it) the large cooking school serves as a backdrop only. The cooking school, which furnishes some of the demonstration technique, is not the demonstration. The exceptions to this may be the group meetings and demonstrations with brides and certain youth groups.

Ideas for Dramatic Presentation

Someone else asks for "Suggested Methods for Home Economic Personnel to Make Dramatic Demonstrations Before Groups"—I believe that the best thing that can be done in this connection is to refer you to the paper presented by Miss Elizabeth Woody of G.E. at the Home Service Conference of the Southeastern Electric Exchange in Atlanta this past spring.

Here are a few other tried and proven ideas, among which may be one new to you. With the clean electric range, the Home Service Advisor can rub the white cuff of her uniform across the surface units several times during the demonstration, proving its cleanliness. There can be a "Good Old Days" demonstration, doing the same cooking at the same time on old and new electric ranges, making comparisons.

How about melting your chocolate for icing on a piece of waxed paper laid directly on a surface unit with simmer heat on. Possibly some unusual or unique stories from your customers can be the source of something dramatic. For example, the oven meal left in the range with the clock controls all set, when the family was kept away over night by a storm and returned the next morning to have a hot and unburned dinner for breakfast—or the young wife who apologized for the gruffness of her husband when she told with pride of their brand new electric range, bought only by deferring the purchase of a bed, with a studio couch serving them until further savings accumulated.

Another question frequently asked: "What plans are there for providing modern equipment for home Economics Departments of high schools, consolidated schools and colleges?" Well, I suppose everybody is now familiar with the specific plans of at least four of the largest manufacturers of electric ranges, that provide for the sale at low prices of all domestic electric equipment in their

lines for the use of such departments. These plans provide for annual replacement of all such appliances for a period of five years at little or no cost each subsequent year. We have been pleased to learn of these plans being actively promoted by dealers in our area. It is our feeling that electrification is the objective, no matter whose equipment, provided it has modern features and is a quality product.

In our own territory we have laid the groundwork for introducing this plan, through the loan of at least one electric range to each such department, with biannual replacement. This has been done for many years. This plan will be replaced by the new manufacturers' plans as quickly as is possible, without harming our relations. The manufacturers' plans should be promoted by us, in the interests of all concerned, particularly that of the schools.

The best equipment in the world is only as good as the way it is used. So, let's follow up and continue our cooperation with the schools, tactfully offering our ideas and suggestions to Home Economics teachers and giving the services of our Home Service Advisors for demonstrations wherever we can help.

Finally—Our Home Service Departments must grow with our problems because of the good they do in establishing our companies as human, friendly organizations in the eyes of the women we serve, and of some of the men, too. Because of the better understanding and appreciation they bring about of the many services electricity will perform.

But we need to be careful that we do not let new needs and new ideas carry this group too far away from certain basic services which only they can perform so well.

Purchasing and Stores Committee

(*Continued from page* 8)

A meeting of the Purchasing and Stores Committee has been called for March 31, April 1 and 2, at the Palmer House in Chicago. Organization and program of the new committee will be perfected and papers and reports already under way will be presented and discussed. This will be an open meeting and persons interested in the management and operating problems of utility purchasing and stores departments will be welcome to attend, whether or not they are members of the Purchasing and Stores Committee.

Effect of Automatically Controlled Motor-Driven Devices Upon Distribution Feeder Loads

(*Continued from page* 13)

which test data are given in Fig. 1. This circuit has a motor load saturation of approximately 29 per cent with an operating diversity of approximately 3.5. These circuit load characteristics are such that the entire load cannot be reestablished in one operation, if the circuit is loaded to rated capacity. Calculations show that the load limit on this circuit equipped with the old style relays is approximately 67 per cent of the circuit rating and 96 per cent when the newer type relays are used. The limiting current with the old style relay is the short time motor starting current and, in the case of the relays having greater inverse time characteristics it is the motor running current which is excessive.

It is apparent that the problem must be given serious consideration at this time when circuit loads are approaching circuit capacity and the promotion of the use of new types of automatically controlled motor-operated devices is tending to increase the connected motor load. Increased diversification of motor operation may permit these new devices to be served with but little increase in the percent of motor load on the circuit, yet both the increase in diversity and the smaller increase in percent of motor load on the circuit both tend to reduce margin with which to reestablish service after a prolonged circuit interruption. The danger of pick-up trouble may well escape recognition until it is encountered. This problem is still further aggravated by the increasing demand for reductions in extended interruptions because of the greater dependence upon electric service brought about by the use of these newer household appliances.

No relief can be expected in the solution of this problem from higher tripping values or more time delay in circuit protection relays. Present protection practices are generally recognized as having reached or possibly exceeded the upper limit dictated by public safety requirements and economical operations. Higher grades of construction and the application of network principles will minimize the frequency of occurrence, but the severity of the service interruption will not be reduced.

Apparently the only solution which will permit increasing the percentage of motor load or raising the diversification of the existing proportion of total circuit load represented by automatically controlled motor load beyond the present limit defined by the ability to reestablish circuit load by reclosing the feeder breaker, is to provide for the subdivision of the distribution circuit into load areas small enough so that the total diversified and undiversified loads are below the tripping values of the circuit feeder protective devices. It seems practical, at this time, to develop pole mounted contactors or switches with controls which will open the switch after a predetermined period of voltage interruption and then reclose, with sufficient time delay after voltage is reestablished to the supply side of the switch. In this manner, the total circuit load can be automatically sectionalized into areas sufficiently small to permit "pick-up" one at a time under conditions within the time-current limits of the circuit feeder protective devices.

The following principles must hereafter be given recognition in the design of distribution circuits:

1. Extended outages on circuits supplying automatically controlled motor driven appliances will eliminate or greatly reduce the normal diversity of demand, with the result that after reestablishment of voltage, loads, considerably in excess of those normally experienced, will be experienced.

2. Increasing percentages of normal motor load or diversity of motor operation will result in larger increases of abnormal short time load upon reestablishment of service after extended outages.

3. The voltage drop due to motor starting current requirements may be sufficiently great, particularly on circuits where normal load voltage drop correction has been provided by means of step boosters on capacitors, to create conditions under which the time required to supply adequate starting voltage to the motor terminals is long enough to cause damage to the motors.

4. The ability to reestablish service after interruptions may be the determining factor in establishing capacity limits of circuits rather than the normal load carrying limitations such as conductor size, voltage drops or physical characteristics of materials used.

Recognition is given to E. O. Painter for his work in collecting and summarizing field data and to L. M. Olmsted for his analysis of the general problem. Their data have been utilized as the basis for this presentation.

The Institute's Prize Awards

Their Renewal Offers National Recognition for Outstanding Activities of Electric Companies and Individuals

WITH the resumption of the several prize awards offered through the Edison Electric Institute for outstanding performances in different phases of operations in the electric light and power industry, these awards will again help to stimulate contributions to the progress of the industry. Suspended during the war years, their renewal makes it possible for companies and individuals to receive fitting recognition for excellent records in varied activities, with the consequent beneficial effect upon morale in large groups of employees.

While most of the awards described in this article will be presented during 1947 for performance during the past year, the George A. Hughes Award, for promotion of electric ranges, and the Augustus D. Curtis Award, for commercial lighting installations, will not be awarded until 1948, and will be based upon activities completed in 1947.

Charles A. Coffin Award

Most coveted of the EEI awards among operating electric companies is the Charles A. Coffin Award. This award, which consists of a gold medal and a supplementary cash award, is given to the electric company which, during the year, has achieved the greatest advancement in its operations and physical plant, and has thus made a distinguished contribution to the development of electric light and power, for the convenience of the public and the benefit of the industry.

While information submitted by companies desiring to compete for the Coffin Award should relate particularly to accomplishments reaching fruition during 1946, information relating to decisions and operations of earlier years may be included, when they played an important part in bringing about the outstanding accomplishments cited.

A brief and simple presentation of the significant accomplishments is submitted to the Coffin Award Committee by each company entering the contest. Technical advances made in its power system, progress in consumer relations, accounting and rate-making methods, promotion and advertising, and other operating functions, are all proper subjects upon which the company's entry may be based.

Since the establishment of the Coffin Award 25 years ago, 18 companies have received this recognition for outstanding work. No awards were made in 1942, 1943 and 1945. As a tribute to the magnificent contribution of the electric power industry to the war effort, the 1944 award was bestowed collectively upon the entire industry.

All entries for the Coffin Award must be filed with the Committee not later than April 1, 1947. The award presentation itself will be made at the EEI annual meeting, to be held at Atlantic City, June 2-5, 1947.

Thomas W. Martin Rural Electrification Award

Outstanding among tokens of distinction for companies actively engaged in extending rural power lines is the Thomas W. Martin Rural Electrification Award, offered by Thomas W. Martin, President of the Alabama Power Company. This award is presented to the operating company which makes the greatest contribution to the progress of rural electrification and agricultural advancement during the year.

Unusually keen competition is expected for the Martin Award this year, in view of the record number of new customers connected during 1946—a large portion of whom were in rural districts. The gradual easing of shortages of construction equipment and man-power is expected to accelerate the aggressive program of electric utilities to bring electricity to the farm, and to encourage its uses in every way that will prove profitable to the farmer.

Important factors which will be considered by the Martin Award Committee in selecting the winning company are: the agricultural progress which has been made in the company's territory, due to uses of electricity; its development of the use of electric service on rural lines; the cooperation with other agencies, such as agricultural colleges, extension service agencies, and others; the organization and plans prepared for intensive rural development, such as stock improvement and soil erosion programs, which help to raise the farming and living standards in the area.

The Martin Award consists of a handsome bronze plaque, upon which the winning company's name is engraved, with a suitable recognition of the accomplishment it symbolizes. *Entries must be received by February 1, 1947.* The presentation of the Award will be made at the EEI Sales Conference, Chicago, Ill., from March 31 to April 3.

Claude L. Matthews Valor Awards

During the war it was widely recognized by both the Army and Navy that prompt recognition of valor, with an appropriate award, was a potent factor in keeping morale high among large groups. Pride—eagerness for distinction—knowledge that outstanding service is appreciated—whatever the reason, a tiny ribbon on one man's chest often improved the morale of the individual and of his entire unit.

Electric utility men and women who display heroism in line of duty may receive the same type of recognition through the Claude L. Matthews Awards. Offered to employees of all light and power companies, these awards are made for "extraordinary courage and devotion to duty in efforts to maintain important electric service, or to restore service in the shortest possible time."

The Matthews Awards consist of three cash prizes of $150 each, with accompanying citations and appropriate lapel pins. Among the points considered by the Committee in making its decisions are the importance of the electric service affected, and the courage, good judgment, quick action and devotion to duty displayed by the employee.

All recommendations for the Awards, which must come from chief executives of the companies involved, must be forwarded to EEI by April 1, 1947. The presentation will be made at the annual meeting at Atlantic City.

Laura McCall Award

Of major interest to the feminine side of the job of supplying electric light and power is the Laura McCall Award for home service departments who substantially advance electrical living in the home by promoting interest in, and better use of, electricity and electrical equipment.

Named in memory of Laura McCall, for many years the head of *McCall's Magazine*, the Award consists of five prizes. The first-prize winner receives a plaque, on which the name of the winning department and company is engraved, and $150 in war bonds, to the person or persons principally responsible. Four other prizes, totaling $250 in bonds and stamps, are awarded to other home service departments which have turned in outstanding jobs during the year.

The public recognition of outstanding achievements in home service that is made possible by the McCall Award encourages activity designed to increase the contribution that labor-saving electrical equipment can make to the health and happiness of the American woman.

Entries for the McCall Award must be received at EEI by February 15, 1947. The Award will be presented at the Sales Conference in Chicago, March 31-April 3, 1947.

Curtis Award for Lighting Achievements in 1947

Commercial lighting men will welcome the resumption of the Augustus D. Curtis Award, which is intended to stimulate the application of modern light sources and efficient lighting equipment in both old and new structures, excluding residences and industrial establishments.

Any commercial lighting installation accomplished during 1947 may be the basis of an entry, whether a new installation or the general re-lighting of an interior. High levels of illumination as measured in footcandles, and applied in accordance with Better Light-Better Sight principles will be a factor of major importance in selecting the winner. The installation may be designed for incandescent lighting, fluorescent fixtures, or a combination of the two.

The first prize is a certificate to the winning company, and $200 in cash to the person primarily responsible for the lighting installation. Second prize is a certificate, with $100 to the individual responsible. Two other cash awards of $50 and $25 complete the roster of prizes under the Curtis Award.

Entries must be received at EEI on or before February 1, 1948, and the Curtis Award presentations will be made at the 1948 EEI Sales Conference.

Hughes Award for 1947 Electric Range Promotion

Electric companies who achieve "outstanding progress in the promotion of residential electric ranges, either directly or through dealers" during 1947, are urged to compete for the George A. Hughes Award. This Award, which consists of a trophy, a plaque, and a total of $500 in cash prizes, is offered in honor of the late George A. Hughes, a pioneer in the electric range field, and from 1918 to 1943, head of the Edison General Electric Appliance Company, Inc.

The judges will consider as the basis for their decision of the winning company the advertising prepared on electric ranges; the sales training program for both dealers and company personnel; activities directed at builders, architects, home economics teachers and others; the work of the Company home economists in promoting electric cooking, and the organization developed by the company to promote the sale of electric ranges.

Entries for the Hughes Award must be received by EEI on or before February 1, 1948, and the Award itself will be made at the 1948 EEI Sales Conference.

Details Available on All Awards

For the benefit of companies desiring to submit entries for any of the EEI awards, the Prize Awards Committee has prepared detailed information that will be of marked assistance in preparing reports. This data is available upon request to the Prize Awards Committee, Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.

Better Light-Better Sight 1947 Program Will Be Most Comprehensive Ever Offered

THE most comprehensive educational activity on the benefits of Better Light that has ever been sponsored by the Better Light-Better Sight Bureau will be ready for use within the near future, according to Harry Restofski, Bureau Chairman. Among the materials included in the program are sound-slide films, newspaper advertising suggestions, booklets, teachers' guides, displays, radio scripts and many other forms of educational aids, he said.

Each item supplied in the Bureau's program is designed to help increase public understanding of the need for better lighting, and thus spearhead the sales promotional plans of electric power companies, electrical leagues and equipment manufacturers, Mr. Restofski said.

Innumerable requests from schools and colleges, parent-teacher associations and other educational groups for suitable material to be used in instruction on the relationship between light and sight were another important factor in preparing a program of such wide scope at the present time, Mr. Restofski continued.

The materials to be offered by the Bureau in this activity, exceed by far, both in number and variety, any of the programs previously prepared, and represent an expenditure of about $150,000, he declared.

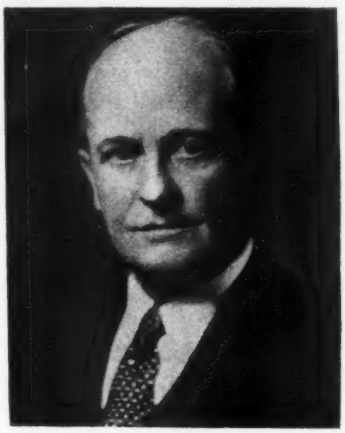
The Bureau's program will be especially effective, Mr. Restofski said, when used in conjunction with the industry-wide Planned Lighting Program, which was recently announced by the Edison Electric Institute to promote better lighting in five major markets. The Bureau's program will perform the educational groundwork that experience has shown to be so necessary, Mr. Restofski explained.

The booklets, films and many other aids that make up the Bureau's 1947 activity have also been designed for assistance to teachers, and are expected to be used in the education of hundreds of thousands of children in this important subject, he said. A definite contribution to human health and welfare will thus be made, Mr. Restofski declared.

"The Better Light-Better Sight Bureau is ready to make its contribution to the job of relighting America," Mr. Restofski said. "The educational materials prepared by the Bureau will help to accelerate the replacement of inefficient equipment. As a wider public understanding of the advantages of good lighting is created through effective educational programs, the quality of lighting in homes and places of business will climb, and the public will attain the many benefits of Better Sight through Better Light."

PERSONALS

COL. WILLIAM KELLY has retired as chairman of the executive committee of the Buffalo Niagara Electric Corp. under the company's retirement plan for its executives. He has been called upon by the government to direct an important phase of reconversion and revitalizing industrial production in Germany and will leave about Feb. 1.



COL. KELLY

Col. Kelly will become chief of the Public Utilities Section of the Industrial Branch of the Office of Military Government for Germany, replacing Cornelius De Forest, a retired executive of the Columbia Gas & Electric System.

Former president of the Buffalo, Niagara & Eastern Power Corp., Col. Kelly is a distinguished authority on public utilities and electric power. He is ending a 20-year career with the power utilities of western New York, during which he brought western New York's power system to a high peak of efficiency.

Following graduation at the head of his class from the U. S. Military Academy at West Point in 1899, Col. Kelly was commissioned an officer in the Engineering Corps of the United States Army, serving through various grades until 1928, when he resigned from military service. For his service in World War I, he was awarded the Distinguished Service Medal.

Following the war, Col. Kelly served for five years as chief engineer of the Federal Power Commission and was appointed by the federal government as a member of the Joint Board of Engineers, St. Lawrence River project. Going to Buffalo, Niagara & Eastern Power Corp. in 1926 as vice president in charge of engineering, Col. Kelly was appointed three years later to the position of vice president and general manager, and in 1933 he was elected president.

He is a fellow of the American Institute of Electrical Engineers, and of the American Association for the Advancement of Science and a member of the Society of American Military Engineers.

ALEXANDER M. BEEBEE has been named president of the Rochester Gas and Electric Corp., Rochester, N. Y., to succeed HERMAN RUSSELL, who was appointed chairman of the board. EDWARD G. MINER was made chairman of the executive committee.

Mr. Beebee began his career with the Rochester utility while he was a student at Cornell University. He was graduated in 1915 with a degree in electrical engineering and shortly afterward sought permanent employment with the company. There were no openings in the electrical department so Mr. Beebee took a position in the gas department.

MR. BEEBEE

Through successive promotions he moved up to the position of general superintendent of the gas department in 1927 and two years ago was made a vice president of the company.

Mr. Russell, retiring president, was connected with Rochester Gas and Electric since 1905 and served as president since 1929. He is a former president of the American Gas Association and the Rochester Chamber of Commerce and is actively associated with many other organizations.

In a move to reassign executive responsibility, due to community growth and a general expansion of company operations, L. M. KLAUBER, vice president and general manager of the San Diego Gas & Electric Co., has been made president of the company by action of its board of directors.

MR. KLAUBER

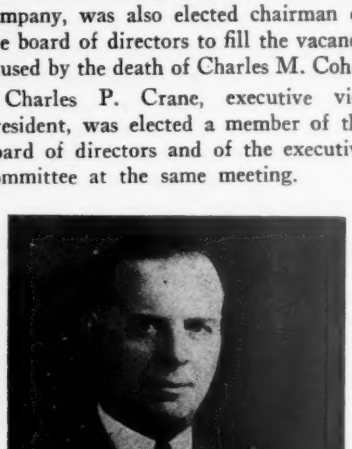
Mr. Klauber succeeds HANCE H. CLELAND, who was in turn elected to the newly created office of chairman of the board of directors, a full-time position. Mr. Cleland will continue to take an active interest in company and civic affairs.

Mr. Klauber went to work for the company in 1911 as an electric sign salesman. In succession he was placed in charge of the company's engineering department, then made superintendent of the electric production and distribution departments, assistant general superintendent, general superintendent, vice president in charge of operations and last, in April, 1941, he was elected vice president and general manager.

Active in technical and scientific societies, Mr. Klauber is a past president of the Pacific Coast Electrical Association and the Pacific Coast Gas Association. He was honored by the University of California with a law degree for "achievement in engineering and science." A native of San Diego, Calif., he was graduated from Stanford University in 1908 with an A. B. degree in electrical engineering. After graduation he completed a Westinghouse graduate apprenticeship in Pittsburgh.

At a meeting of the board of directors of the Consolidated Gas, Electric Light & Power Company of Baltimore, WILLIAM SCHMIDT, JR., president of the company, was also elected chairman of the board of directors to fill the vacancy caused by the death of Charles M. Cohn.

Charles P. Crane, executive vice president, was elected a member of the board of directors and of the executive committee at the same meeting.



MR. SCHMIDT

Mr. Schmidt began his business career in 1898 as a clerk in the employ of the Edison Illuminating Company, one of the predecessors of the present company.

He was elected secretary of the company in 1910, a director in 1914, and in 1915 became assistant treasurer.

In 1926 he was promoted to treasurer and in 1938 was elected vice president. Later, in 1942, he was elected executive vice president and in 1946 was elected president.

Mr. Schmidt was educated in the Baltimore Schools and is a Member of the Bar.

He is a Director and Member of the Executive Committee of the Fidelity Trust Company, and a Director of the Eutaw Savings Bank.

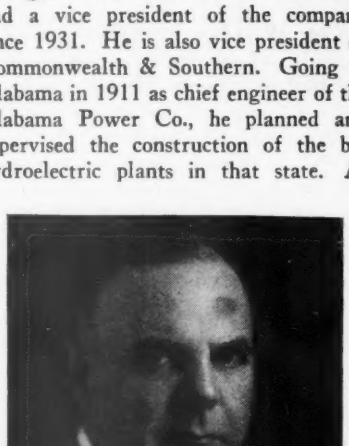
According to an announcement made public by Mr. K. C. Long, president of The Dayton Power and Light Company, HAROLD E. DEARDORFF and JAMES M. STUART have been elected to Vice Presidencies of the company. The dual elections are effective Jan. 1, 1947, and are the result of progressive steps in their respective positions. Both officials will continue to administer their present duties, while at the same time assuming their newly-appointed assignments.

Mr. Deardorff has been associated with The Dayton Power and Light Company since 1917 when he was a co-operative student from the University of Cincinnati. Since graduating in 1922, with a degree in Electrical Engineering, he has progressed steadily through the company ranks, holding such positions as Supervisor of Electrical Maintenance Department, Substation Design Engineer and Engineer in the Electric Meter and Test Department. In 1940, Mr. Deardorff was made Supervisor of System Planning Engineering, which position he will continue to hold along with his newly-appointed duties as Vice President. He is a member of the American Institute of Electrical Engineers, a Registered Professional Engineer in the State of Ohio, a member of the Electrical Equipment Committee of the Edison Electric Institute, and a member also of the Engineers Club of Dayton.

Mr. Stuart became associated with The Dayton Power and Light Company in March, 1923. He completed two years' study at the University of Cincinnati in Electrical Engineering and acquired a well-rounded education through his own efforts, attending night school and by correspondence courses. His loyalty and aptitude have earned him a position of respect with the company which has been rewarded by a progressive career. Mr. Stuart has held the position of clerk in the Line Department, Foreman in the Underground Department, Assistant Supervisor and Supervisor of Underground, and in October, 1942, he was made Manager of the Electric Division. As a newly-elected Vice President, Mr. Stuart will assume added responsibilities along with his present duties as Manager of Electric Division. He is a member of the National Association of Foremen and the Engineers Club of Dayton.

EUGENE A. YATES, a pioneer in the development of the hydroelectric resources of the Southeast, has been elected chairman of the board of directors of the Georgia Power Co., succeeding the late Preston S. Arkwright. G. H. BOURNE of New York, comptroller of the Commonwealth & Southern Corp., was elected a member of the board of directors to fill the vacancy caused by Mr. Arkwright's death and C. B. MCMANUS, assistant to the president and a member of the board of directors, was elected a vice president.

Mr. Yates has been a member of the Georgia Power Co.'s board since 1932 and a vice president of the company since 1931. He is also vice president of Commonwealth & Southern. Going to Alabama in 1911 as chief engineer of the Alabama Power Co., he planned and supervised the construction of the big hydroelectric plants in that state. As



MR. YATES

general manager of the Alabama Power Co. and of the Southeastern Power & Light Co., he was closely associated with the rapid expansion of the electrical business throughout this area. Shortly after the formation of Commonwealth & Southern, Mr. Yates was elected a vice president, in general charge of the operation of the Southern companies, including Georgia, Alabama, South Carolina, Mississippi and Gulf power companies. Before going to Alabama, he did engineering work with the Pennsylvania Railroad, participating in the construction of the railroad tunnels into New York City.

His headquarters for the present will remain in New York. Active management of Georgia Power Co. will remain in the hands of William E. Mitchell, president since 1945.

Mr. McManus, the new vice president, has been connected with the company since 1927 as superintendent of district operations, assistant operating manager, and assistant to the president. He is a native of Smithville, Ga., and a graduate of Alabama Polytechnic Institute. After receiving an engineering degree from Auburn in 1916 and after service as an officer in the first World War, he joined the Alabama Power Company in 1919.

JOHN E. LYNCH, financial vice president of Hartford Electric Light Company, retired on December 31 after long service with the company. RICHARD B. CURRAN of New London, vice president of Connecticut Power Company has been elected vice president of Hartford Electric Light Company to succeed Mr. Lynch.

Mr. Lynch has been in the company's service since 1897. The electric light company was then in its infancy, and his rise to responsible positions in accounting department has been co-incident with growth of the company in its service to Hartford and surrounding towns.

Mr. Lynch has been an officer of the company since 1909, serving with all the presidents since the company was founded in 1881. His first duties were as clerk. He was promoted to supervisor in 1899, and was elected secretary in 1909. He was made treasurer in 1924, and in 1929 became financial vice president.

Mr. Lynch has been a director of Connecticut Power Company since 1921 and was formerly its secretary and treasurer. He also served for a number of years as secretary-treasurer and director of Manchester Electric Company and a secretary-treasurer and director of Hartford Electric Steel Corporation.

Mr. Curran, a native of New London, has long been prominent in that city's civic and business activities. He is a graduate of the New London schools and New London Business College.

He entered the employ of the Connecticut Power Company in 1914 and served for two years in the billing department. From 1916 to 1918 he was officer manager of the Middletown division, returning to New London as the company's chief clerk. He was then promoted to assistant secretary in 1922 and was made secretary in 1924. He was elected secretary-treasurer in 1933, and financial vice president in 1946.

CHARLES E. POEHNERT has been elected secretary and treasurer of Hartford Electric Light Company effective Jan. 1. He succeeds ERNEST E. NUTTING who has retired after 48 years in the company's service Also retiring will be assistant treasurer LEONARD D. WAY, who is completing 45 years' service.

Mr. Poehnert, formerly assistant treasurer and assistant secretary, has been with the company since 1907.

He joined the company as clerk in the accounting department and advanced through numerous positions in the company's accounting department and was elected assistant secretary in 1929 and assistant treasurer in June, 1946.

Mr. Nutting's service with the company is marked by the fact that he and vice president John E. Lynch, whose retirement also took place Jan. 1, have the longest tenure as officers of the company. Both became officers in 1909 and have served with all the presidents of the company since its founding in 1881.

Mr. Nutting was born in 1881, the same year which saw the founding of the company, in the growth of which he has played a prominent part.

After graduation from grammar school in Warehouse Point, he studied business methods and accounting at Huntsinger's Business College, from which he was graduated March 11, 1899. On the next day he entered the employ of the company as clerk in accounting department. Ten years later he was promoted to be assistant treasurer. He also served as personal secretary to the late A. C. Dunham, company's founder and first president.

He was later advanced to treasurer, and on Jan. 29, 1929, he became secretary and treasurer. He was active in accounting societies connected with industry, particularly with the National Electric Light Association.

He was educated in the Hartford schools and Huntsinger Business College. He entered the employ of the company in November, 1901, as clerk. He later became cashier in accounting department and was elected assistant secretary in 1918. He became assistant treasurer in 1929.

The Board of Directors of the Delaware Power and Light Company has elected two additional vice presidents of the company, H. H. PLANK and AUSTIN T. GARDNER. At the same time, it appointed J. W. MACKIE to the office of comptroller.

Mr. Plank is a native of Watertown, N. Y., and a graduate of Clarkson College of Technology. Except for two years' service in the Army during World War I, he has been engaged in public utility work since leaving college in 1917. He joined the Delaware Power and Light Company's organization in 1943 and since 1944 has held the position of assistant general manager. Prior to Mr. Plank's coming to Wilmington, he was associated for many years with The United Gas Improvement Company in Philadelphia.

Mr. Gardner came to Delaware Power and Light Company in December, 1943, and in April, 1944, was elected Secretary and Comptroller of the company. In addition to his new duties as vice president, Mr. Gardner will continue as secretary of the Company. A native of Illinois, he has been active in the utility industry since his graduation from the School of Business Administration of the University of Chicago, serving successively the Utilities Power and Light Corporation, Chicago, Utility Auditors and Tax Consultants, and The Utilities Management Corporation. During his employment by the latter company, which rendered financial and accounting service to various utility companies, he participated in many proceedings before the Securities & Exchange Commission, the Federal Power Commission and various State Regulatory Commissions. From 1941 to 1943, when he came to Delaware, he was Assistant to the President of the Associated Electric Company of New York.

Mr. Mackie came to Wilmington in 1931 as assistant comptroller of the Delaware Power and Light Company. A native of Nanticoke, Pa., he received his education in that community and was first employed with the Luzerne County Gas and Electric Company becoming, successively, chief clerk of the accounting department and then auditor of the company, which position he resigned to accept employment with the Delaware Power and Light Company.

As a result of the above changes, Mr. H. J. Perkner, auditor, will become assistant to the comptroller of the company.

FRED A. COMPTON, formerly purchasing agent, has been appointed sales manager of the Detroit Edison Company, it has been announced by Angus D. McLay, vice president in charge of sales.

CHESTER F. OGDEN, formerly assistant purchasing agent, has been appointed purchasing agent by James W. Parker, President, to succeed Mr. Compton.

Mr. McLay has held the position of vice president and sales manager since the retirement in 1943 of Miss Sarah M. Sheridan. He continues as vice president.

Mr. Compton, born in Fort Wayne,

was graduated from the engineering college of the University of Michigan in 1914. He has since that date been in Detroit Edison's construction and purchasing departments except for service as an officer in World War I. He was active in a utility material procurement and exchange program, working with the government and other utilities in the second World War at the request of J. A. Krug, then director of the office of war utilities. Since 1939 he has had charge of purchases at Detroit Edison, including fuel.

Mr. Ogden has been with Detroit Edison since 1934 when he was graduated as an engineer with business administration training from the University of Michigan. During the war Mr. Ogden was active in the company's rationing programs and in continuing the company's standardization of purchased items.

JOSEPH W. KLING, member of the Georgia Power Company advertising department for the past 16 years, has been appointed acting advertising manager of the company. A former member of *The Atlanta Journal* staff, Mr. Kling succeeds JAMES M. STAFFORD, JR., who resigned from the company to become director of advertising and publicity for the United Light and Railways Service Company with headquarters in Kansas City, Mo.

JOHN R. MARSH, advertising manager, is on leave of absence due to ill health.

A native of Atlanta, Mr. Kling attended the local public schools and Boys' High School before entering the University of Georgia, from which he received the bachelor of science degree in 1924. He joined the *Atlanta Journal* the following year, serving first as a reporter and for four years on the copy desk.

He came to the Georgia Power Company in 1930. After editing the company's employee newspaper, he served for a number of years as editor of "Two Bells." For some time he has had supervision of the company's transportation advertising program in addition to other duties.

One of the transportation advertisements prepared by Mr. Kling was awarded a national first prize in the 1946 better copy contest conducted by the Public Utilities Advertising Association.

CONVENTIONS AND MEETINGS

1947

FEBRUARY

3-4 Prime Movers Committee, EEI, Van Curler Hotel, Schenectady, N. Y.
5-7 Missouri Valley Electric Association, Annual Power Sales Conference and Industrial Power and Heating Section, EEI, Hotel Continental, Kansas City, Mo.
6-7 Accident Prevention Committee, EEI, Henry Grady Hotel, Atlanta, Ga.
10-11 Transmission and Distribution Committee, EEI, Atlanta Biltmore Hotel, Atlanta, Ga.
10-12 Meter and Service Committee, EEI, Robert Treat Hotel, Newark, N. J.
12-13 Electrical Equipment Committee, EEI, Atlanta Biltmore Hotel, Atlanta, Ga.
13-14 Pennsylvania Electric Association, Systems Operation Committee, Lord Baltimore Hotel, Baltimore, Md.
20-21 Pennsylvania Electric Association, Electrical Equipment Committee, Penn-Harris Hotel, Harrisburg, Pa.
20-21 Pennsylvania Electric Association, Transmission and Distribution Committee, Penn-Harris Hotel, Harrisburg, Pa.

MARCH

2-5 American Society of Mechanical Engineers, Spring Meeting, Tulsa, Okla.
3-5 National Electrical Manufacturers Association, Edgewater Beach Hotel, Chicago, Ill.
3-5 Canadian Electrical Association, Western Conference, Vancouver, B. C.
20-21 Oklahoma Utilities Association, Annual Convention, Tulsa Hotel, Tulsa, Okla.
20-21 Southeastern Electric Exchange, Spring Conference Engineering and Operation Section, Sheraton Bon Air Hotel, Augusta, Ga.
March 31-April 3 Thirteenth Annual Sales Conference, EEI, Edgewater Beach Hotel, Chicago, Ill.

APRIL

3-5 Southeastern Electric Exchange, Annual Conference, The Vinoy Park Hotel, St. Petersburg, Fla.
7-9 AGA-EEI National Accounting Conference, Hotel Statler, Buffalo, N. Y.
9-10 Northwest Electric Light and Power Association, Engineering and Operation Section, Multnomah Hotel, Portland, Ore.
16-18 Missouri Valley Electric Association, Engineering Conference, Hotel Continental, Kansas City, Mo.
23-26 American Society of Civil Engineers, Spring Meeting, Phoenix, Ariz.
24-25 Pennsylvania Electric Association, Systems Operation Committee, Buffalo, N. Y.
28-30 Engineering Committees, EEI, Edgewater Beach Hotel, Chicago, Ill.
28-May Chamber of Commerce of the U. S. A., Washington, D. C.

MAY

2-4 Westinghouse Agent-Jobbers Association, Hotel Claridge, Atlantic City, N. J.
4-8 National Electrical Wholesalers Association, Hotel Traymore, Atlantic City, N. J.
7-8 Northwest Electric Light and Power Association, Business Development Section, Olympic Hotel, Seattle, Wash.
13-14 Southeastern Electric Exchange, Home Service Conference, Thomas Jefferson Hotel, Birmingham, Ala.
26-29 National Fire Protection Association, Palmer House, Chicago, Ill.
27-29 National Association of Purchasing Agents, Chicago, Ill.

JUNE

2-5 EDISON ELECTRIC INSTITUTE, Annual Meeting, Atlantic City, N. J.
16-19 National District Heating Association, The Ambassador Hotel, Atlantic City, N. J.
18-20 Canadian Electrical Association, 57th Annual Convention, Algonquin Hotel, St. Andrews, N. B.
22-26 National Electrical Manufacturers Association, The Homestead, Hot Springs, Va.

JULY

16-18 American Society of Civil Engineers, Duluth, Minn.

SEPTEMBER

5-11 National Electrical Contractors Association, San Francisco, Cal.
10-15 Illuminating Engineering Society, Roosevelt Hotel, New Orleans, La.
25-26 Southeastern Electric Exchange, Fall Conference Engineering and Operation Section, Henry Grady Hotel, Atlanta, Ga.

OCTOBER

6-10 35th National Safety Congress and Exposition, Chicago, Ill.
15-18 American Society of Civil Engineers, Fall Meeting, New Orleans, La.
29-31 Southeastern Electric Exchange, General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

OFFICERS

GROVER C. NEFF, *President*.....Wisconsin Power & Light Co., Madison, Wis.
P. H. MCCANCE, *Vice President*.....Duquesne Light Co., Pittsburgh, Pa.
H. S. BENNION, *Vice-President and Managing Director*....420 Lexington Ave., New York 17, N. Y.
K. B. CRUMB, *Treasurer*.....American Gas & Electric Service Corp., New York, N. Y.
MAE B. WOODS, *Secretary*.....420 Lexington Avenue, New York 17, N. Y.

BOARD OF DIRECTORS

(Terms Expiring 1947)

J. M. BARRY.....Alabama Power Co., Birmingham, Ala.
W. C. BELL.....The United Illuminating Co., New Haven, Conn.
G. A. DAVIS.....Oklahoma Gas & Electric Co., Oklahoma City, Okla.
G. M. GADSBY.....Utah Power & Light Co., Salt Lake City, Utah
R. D. JENNISON.....New York State Electric & Gas Corp., Binghamton, N. Y.
F. C. KELLOGG.....Public Utility Engineering & Service Corp., Chicago, Ill.
G. L. MACGREGOR.....Dallas Power & Light Co., Dallas, Tex.
GROVER C. NEFF.....Wisconsin Power & Light Co., Madison, Wis.
CHARLES E. OAKES.....Pennsylvania Power & Light Co., Allentown, Pa.
J. H. POLHEMUS.....Portland General Electric Co., Portland, Ore.
P. H. POWERS.....West Penn Power Co., Pittsburgh, Pa.
FRANK M. WILKES.....Southwestern Gas & Electric Co., Shreveport, La.

(Terms Expiring 1948)

H. B. BRYANS.....Philadelphia Electric Co., Philadelphia, Pa.
R. E. DILLON.....Boston Edison Co., Boston, Mass.
J. G. HOLTZCLAW.....Virginia Electric & Power Co., Richmond, Va.
R. H. KNOWLTON.....The Connecticut Light & Power Co., Hartford, Conn.
J. E. LOISEAU.....Public Service Company of Colorado, Denver, Colo.
FRANK MCLAUGHLIN.....Puget Sound Power & Light Co., Seattle, Wash.
W. E. MITCHELL.....Georgia Power Co., Atlanta, Ga.
W. C. MULLENDORE.....Southern California Edison Co., Ltd., Los Angeles, Calif.
W. H. SAMMIS.....Ohio Edison Co., Akron, Ohio
PHILIP SPORN.....American Gas & Electric Service Corp., New York, N. Y.
L. V. SUTTON.....Carolina Power & Light Co., Raleigh, N. C.
E. S. THOMPSON.....American Water Works & Electric Co., Inc., New York, N. Y.
G. W. VAN DERZEE.....Wisconsin Electric Power Co., Milwaukee, Wis.
JUSTIN R. WHITING.....The Commonwealth & Southern Corp., New York, N. Y.
P. S. YOUNG.....Public Service Electric & Gas Co., Newark, N. J.

(Terms Expiring 1949)

H. C BLACKWELL.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
W. H. BURKE.....Ebasco Services Inc., New York, N. Y.
A. H. KEHOE.....Consolidated Edison Company of New York, Inc., New York, N. Y.
FRANK KRUESI.....Middle West Service Co., Chicago, Ill.
ELMER L. LINDSETH.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
C. E. MICHEL.....Union Electric Company of Missouri, St. Louis, Mo.
ALBERT T. O'NEILL.....Buffalo Niagara Electric Corp., Buffalo, N. Y.
J. W. PARKER.....The Detroit Edison Co., Detroit, Mich.
H. T. PRITCHARD.....Indianapolis Power & Light Co., Indianapolis, Ind.
K. M. ROBINSON.....The Washington Water Power Co., Spokane, Wash.
E. C. STONE.....Duquesne Light Co., Pittsburgh, Pa.
R. L. THOMAS.....Consolidated Gas Electric Light & Power Co., Baltimore, Md.
WILLIAM WEBSTER.....New England Power Association, Boston, Mass.
A. EMORY WISHON.....Pacific Gas and Electric Co., San Francisco, Calif.
H. E. YOUNG.....Northern States Power Co., Minneapolis, Minn.

(Executive Committee)

The Executive Committee consists of the following members of the Board of Directors: Messrs. W. C. Bell, H. B. Bryans, W. H. Burke, C. E. Oakes, P. H. Powers, W. H. Sammis, E. C. Stone, P. S. Young.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

(Continued)

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Texas Power & Light Co., Dallas, Tex.

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Northern States Power Co., Minneapolis, Minn.

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The Hartford Electric Light Co., Hartford, Conn.

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The North American Co., New York, N. Y.

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Philadelphia Electric Co., Philadelphia, Pa.

B. W. LYNCH..San Diego Gas & Electric Co., Chicago, Ill.

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P. H. MCCANCE....Duquesne Light Co., Pittsburgh, Pa.

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Customer Activities, W. E. STURM.....West Penn Power Co., Pittsburgh, Pa.
Depreciation Accounting, A. W. HASTINGS.....Epsco Inc., New York, N. Y.
General Accounting, H. B. HARDWICK.....The Commonwealth & Southern Corp., New York, N. Y.
Plant Accounting and Records, A. J. MAYOTTE.....Consumers Power Co., Jackson, Mich.
Taxation, W. S. ALT.....Union Electric Company of Missouri, St. Louis, Mo.

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